TECHNOLOGY DEPT.

TELEPHONE and Management ENGINEER

Vol 60 #4

JUNE
1956

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THE NATIONAL TELEPHONE MAGAZINE

Featuring in This Issue—

- ★ PUBLIC TALKS ARE GOOD BUSINESS, *by Bill Brooks*
- ★ SPOTLIGHT ON PLANT PRACTICES, *by Ted Talmage*
- ★ "OVER-THE-HORIZON" RADIO TESTS, *by H. N. Misenheimer*
- ★ TRAINING FOR DIAL, *by Ruth E. Richards*
- ★ NEWSLETTERS — INDUSTRY — WASHINGTON — MANAGEMENT

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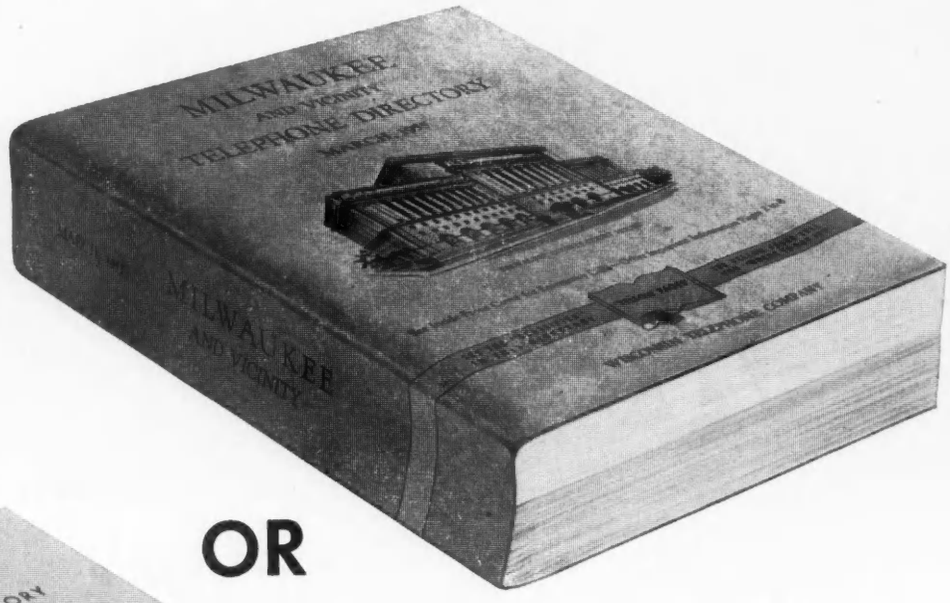

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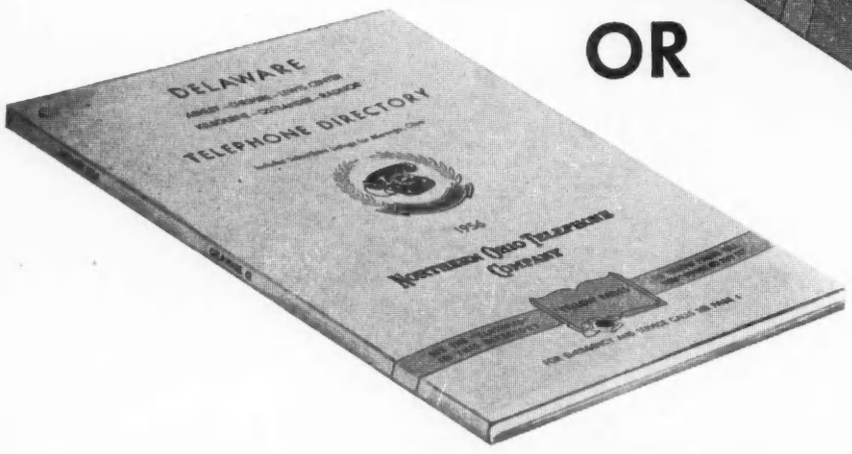

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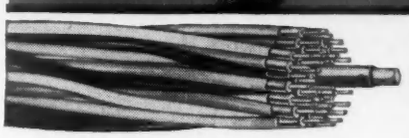

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WB has that which so many others have yet to gain . . . EXPERIENCE

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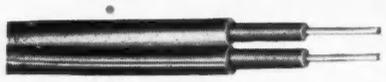
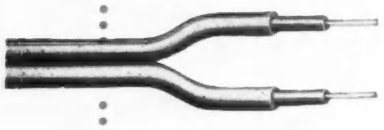


Twisted Pair

Parallel Reinforced



Parallel Figure 8

for LONGER Service Life!

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TELEPHONE and Management ENGINEER

A Telephone Engineer Publication

JUNE 1956
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The National Telephone Magazine

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FRONT COVER

Board of Directors, Indiana Telephone Association at annual meeting in Indianapolis following recent convention: Front row (left to right): R. R. HIRSCHMAN, Indianapolis; E. S. WELCH, Seymour; ROSCOE D. PONTIUS, Rochester; S. K. TRIPPET, Princeton; J. A. HARBAUGH, Sullivan; LOUIS H. MEYER, Lafayette; JOHN GOODWIN, Brookville; E. CLARK MULL, Knightstown; W. J. SCHEIDLER, Greenburg. Back row (left to right): F. E. BOHN, Fort Wayne; R. F. LUCIER, Warsaw; GEORGE A. SCHUMACHER, Indianapolis, Secretary-Treasurer; C. E. McCORMICK, Terre Haute; FRANCIS SIMPSON, Winchester, President; DON E. VAN FLEIT, Garrett; CHARLES THOMAS, Roachdale; ROBERT Dwyer, Brookston; HUGH A. BARNHART, Rochester, guest; W. H. BECK, Sarasota, Florida, guest, and R. V. ACHATZ, Aurora. Board members not in picture are: C D. EHINGER, Decatur, 1st vice-president; LAMAR S. STOOPS, Nappanee, 2nd vice-president, and HARRY S. HANNA, Indianapolis.

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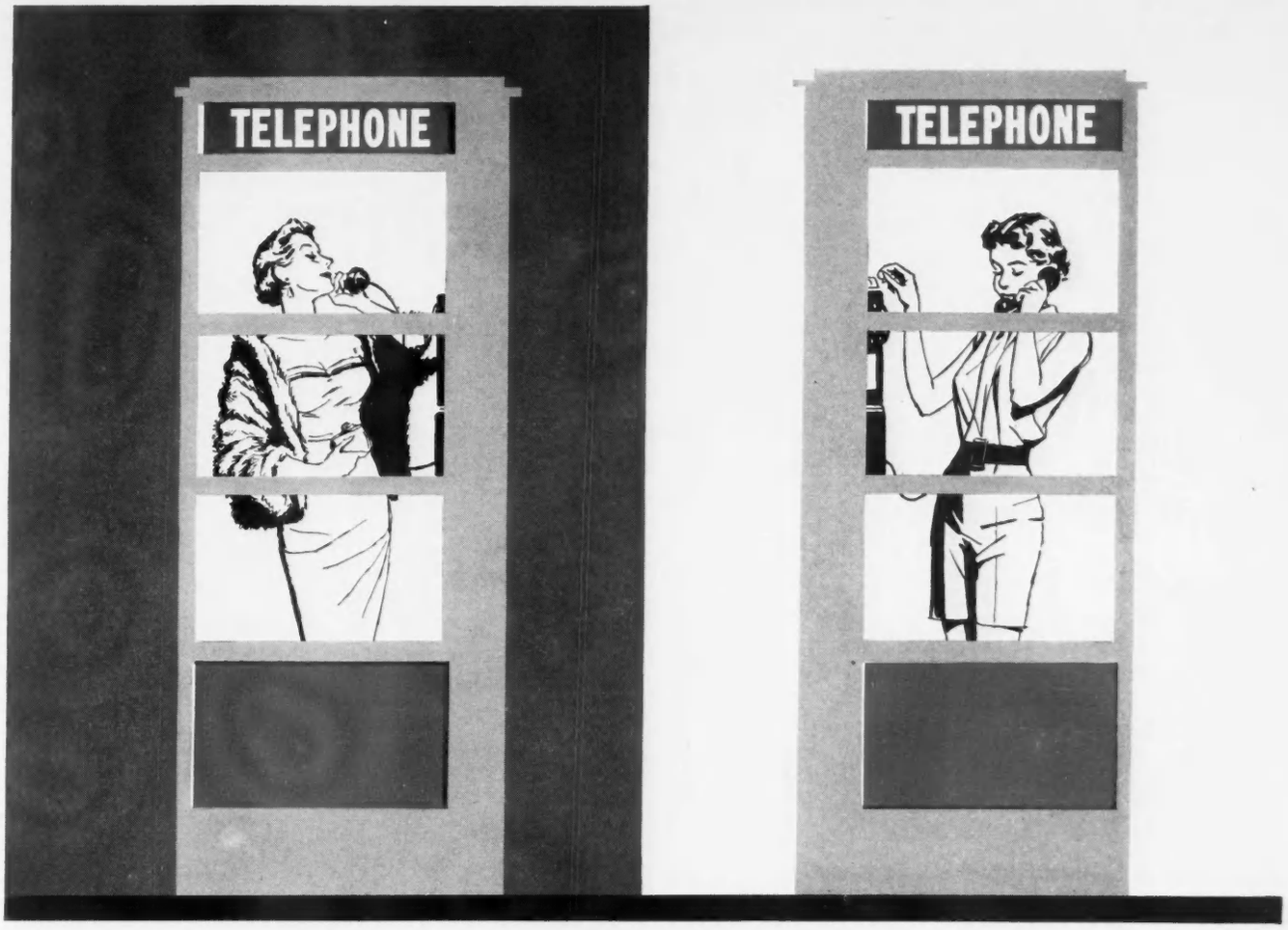

Night and day, these new Alcoa Booths earn money for you

By day it's a brightly colored booth that invites patrons to make that *extra* call. At night it's brightly lighted—easy to see and easy to use. Alcoa's new outdoor phone booths earn revenue for you 24 hours a day.

Other than an occasional washing with soap and water, these Alcoa® Aluminum Booths will practically never need maintenance. The surfaces are anodized aluminum, a process developed by Alcoa, which produces a very hard, durable, corrosion-resistant finish. Alcoa Booths stay bright and shiny with no painting. Pencil marks and smudges wipe right off.

Sturdy Alcoa Booths have the full approval of the REA and Underwriters' Laboratories, Inc. The main sections are high-strength, heat-treated extruded shapes. Sections are interchangeable and can readily be replaced if damaged by traffic.

Patrons like the roomy interior of Alcoa Booths—33½″ square by 86½″ high. Good ventilation is provided by louvers. A handy shelf holds shoppers' packages.

Contact your jobber or write for more information on Alcoa's new money-making booths—another product of Alcoa's Jobbing Division. Aluminum Company of America, 1691-F Alcoa Bldg., Pittsburgh 19, Pa.

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TELEVISION'S FINEST LIVE DRAMA
ALTERNATE SUNDAY EVENINGS

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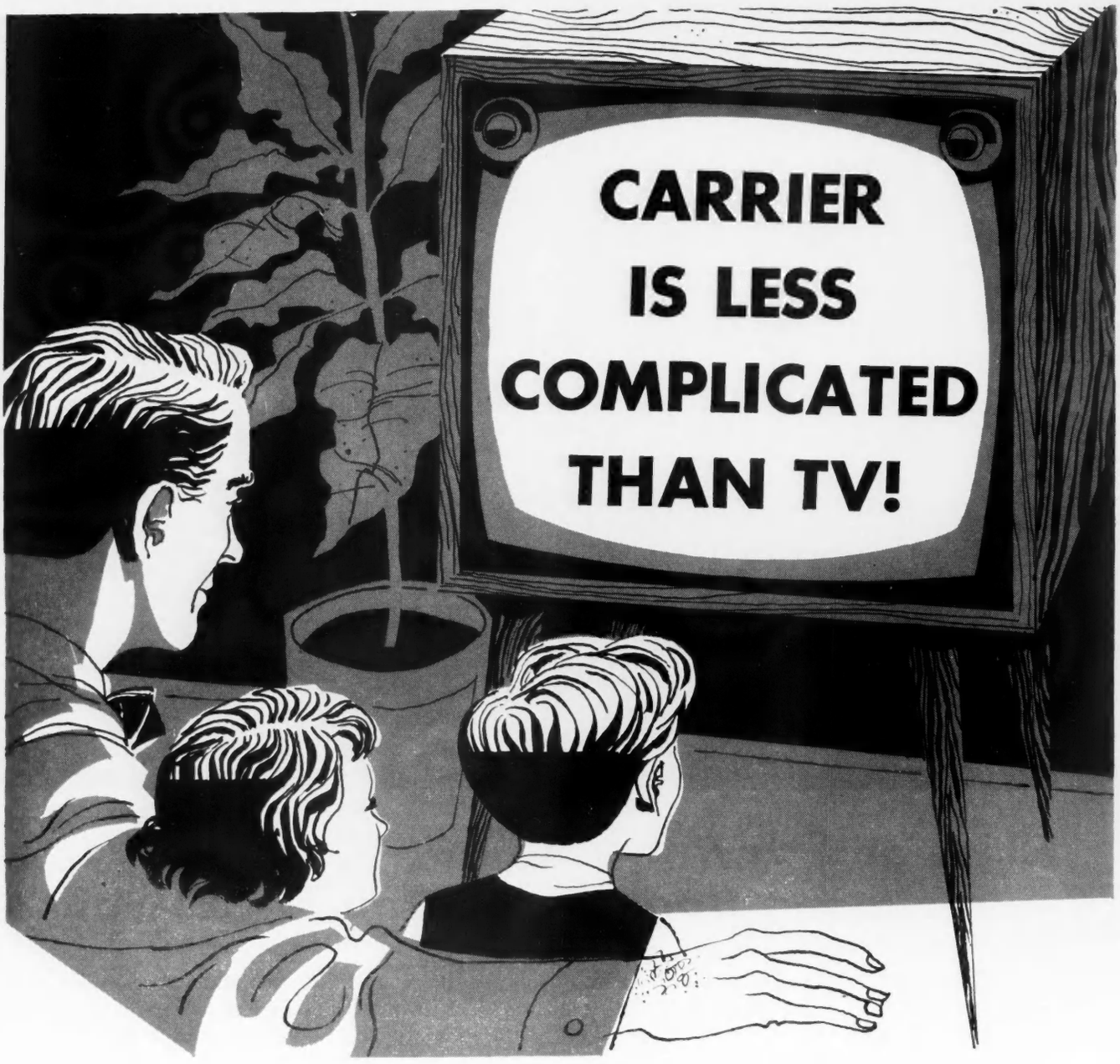


Millions of people enjoy television without understanding its installation and maintenance.

Perhaps you have been putting off the use of carrier because you consider it too complex, too difficult to understand, maintain, and operate. *A Lenkurt Carrier System* will soon change your mind. It is engineered to your requirements and comes to you factory-assembled, rack-mounted, and tested as a system. Installation is quick and easy, and in a matter of minutes it's "all set to go" . . . not as complicated to maintain as the television set in your home. And your worries about adequate circuits are over.

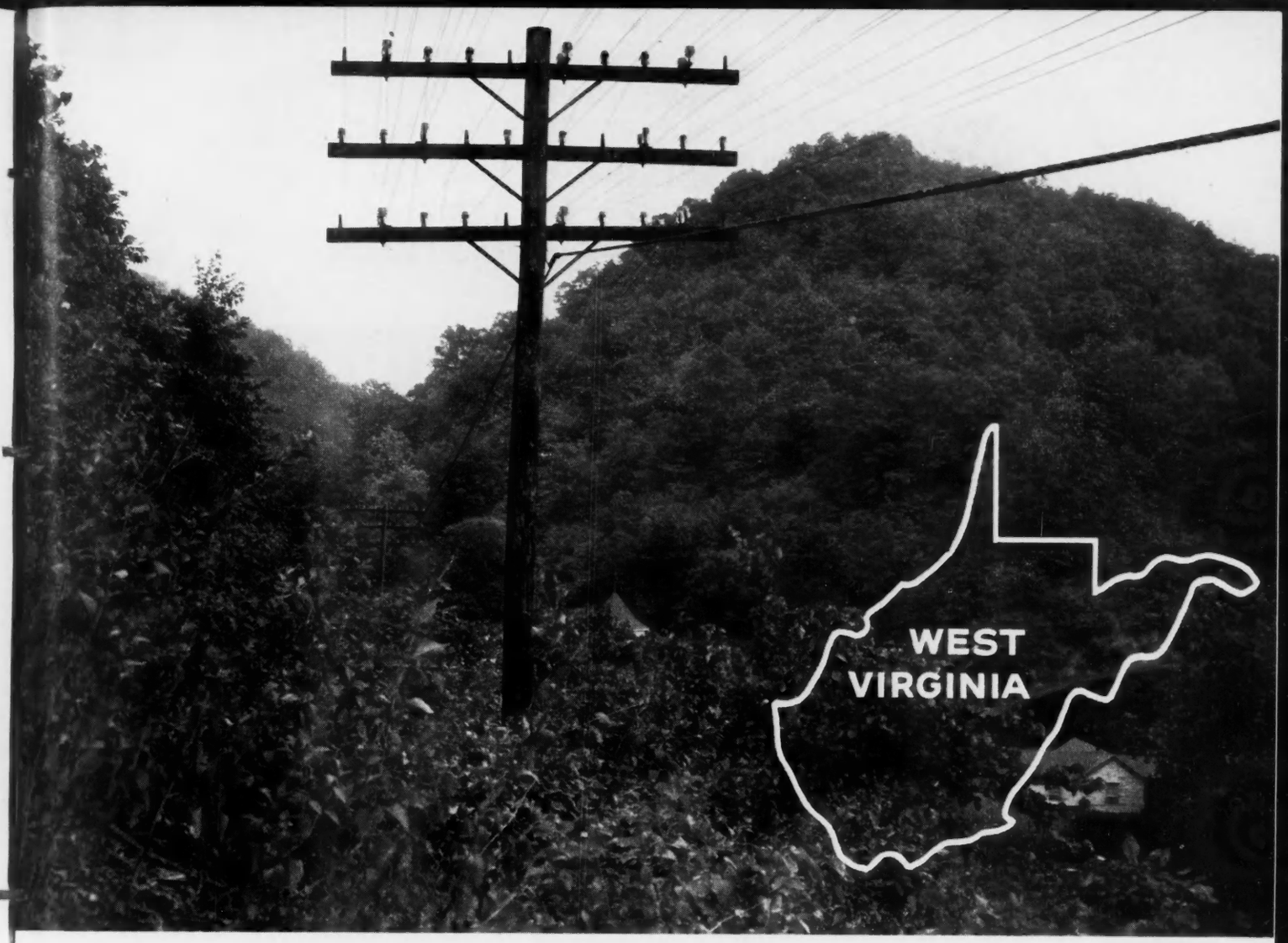
Many companies with *no* carrier experience have found it surprisingly simple and easy to add new circuits with Lenkurt Type 33A carrier equipment. This system has proven itself the least expensive, least complicated, and fastest way to add new channels. Type 33A often proves in at distances as short as 7 miles. You can start with a single channel, if you like, add a second, then a third—up to a total of six channels on a phantom group.

If you would like to know more about a Lenkurt Carrier System—and our "Package Plan" service—write to Automatic Electric Sales Corporation, 1033 West Van Buren Street (HAymarket 1-4300), Chicago 7, Illinois. In Canada: Automatic Electric Sales (Canada) Ltd., Toronto. *Offices in principal cities.*

AUTOMATIC ELECTRIC

Originators of the dual telephone • Pioneers in automatic control

GENERAL SYSTEM INDEPENDENT



Lightweight polyethylene-covered cable

Best in rugged terrain

Installation of additional telephone lines is a costly undertaking here in the West Virginia mountains. Steep slopes overgrown with trees and underbrush make rights-of-way practically inaccessible to motorized equipment. In addition, holes for poles must often be blasted through rock to provide the proper depth.

Most of these problems are solved by cable covered with polyethylene, now used almost exclusively in this area. The extremely light weight of the plastic results in a cable that can be strung on existing poles, often without adding crossarms. Color-coding of pairs aids in installation and trouble-shooting. Where lines are strung along railroads and near coal preparation plants, the chemical resistant polyethylene promises protection from chemical fumes.

Both BAKELITE Brand Polyethylene and Vinyl Plastics have acquired a reputation for outstanding dependability as wire covering materials. They are already in wide use, singly or in combination, in signal control cable, utility line wire and service drop, in power cable and coaxial cable. These materials meet IMSA specifications for fire alarm and signal control cable; ASA standards for weatherproof wire; ASTM D1238-52T Type II, dielectric materials; as well as REA requirements for plastic-covered telephone wire.

To keep you abreast of their latest developments and applications of interest to the telephone industry, Bakelite Company technical publications are available without cost by writing Dept. QT-183.

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Simple circuits and straightforward operation assure easy maintenance—which has helped make Strowger Automatic a success for over 60 years. It will do much to assure *your* success. Write for the facts today.

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AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

GENERAL TELEPHONE SYSTEM INDEPENDENT

ACROSS THE EDITOR'S DESK

Harry H. Bates

HARRY H. BATES, chief executive officer and general manager of the *Dixon (Ill.)* Home Telephone Company, was one of our best friends. An automobile accident prevented his appearing at the recent *Illinois Telephone Association* annual convention of which he served as a director and chairman of the 1956 Program Committee. All of us in attendance signed get well cards to Harry while the convention was in session never dreaming that one week later on May 26 he would succumb to the after effects of the accident. Details of his busy worthwhile deeds are carried in another portion of this issue. We will miss Harry as will hundreds of others who knew his charm and courtesy. He was a beloved gentleman!

Rhinelander

PAUL R. PARSONS, general manager of the *Rhinelander (Wisc.) Telephone Co.*, is very proud these days over the successful conversion to dial operation of the Rhinelander exchange the night of May 26. Less than one year ago the Methodist Church was holding services on the site that now contains the new building and equipment. At the same time the Headwaters Telephone Co. cutover their Sugar Camp Office. Paul has invited us to attend an open house he is planning for later in the summer and as bait offered to reserve a muskie for after hours. Any one for fishing?

Blair C. Stone

CONGRATULATIONS to our old friend *Blair C. Stone* on his elevation to the board of directors of the *Southeastern Telephone Co.* Blair is vice president and Southern Division Manager of that company, a subsidiary of Central Electric & Gas Company. The company operates properties in Florida and Georgia with Blair making his headquarters at Tallahassee, Fla. one of the three state capitals in the U. S. operated by an Independent company. Mr. Stone is very active in civic affairs and duties in his area and has been quite active in affairs of the Florida Telephone Association being a past president of that organization.

Sam B. Dibble

ANOTHER old friend of ours and of the telephone industry passed on after a heart attack on May 14. *Sam B. Dibble, Sr.*, general plant supervisor of the *Citizens Telephone Co.*, Terre Haute, Ind. was a real pioneer with over 54 years of service to the industry having started as a night operator down Texas way when he was 14. We saw the Dibbles at the recent Indiana Telephone Association convention at Indianapolis where their son Allen Dibble was one of the featured speakers. His sudden death was a shock to us as well as his friends of the industry. Notice of his passing will be found on another page of this issue.

"Red" Hightower

"RED" HIGHTOWER, supervisor of public relations of the *General Telephone Co.* of the Southwest is a go-getter. We write that advisedly as anyone elected president of the Texas Jaycees must be a man in a hurry. Red is that man and we predict much activity among the Jaycees during his incumbency. As Jack Haley, secretary of the Texas Telephone Association says "one of our boys made it!"

BUILD LONGER LIFE — GREATER DEPENDABILITY

into your lines with

AMCRECO POLES

To give you the best telephone pole possible, Amcreco poles are pressure treated in creosote. Not just dipped, not just soaked — but creosoted under pressure by the Amcreco treatment methods. This treatment forces protective creosote right into the cells of the wood — preserves the natural strength of the wood — assures many years of dependable service.

Poles pressure treated with creosote by Amcreco methods have high resistance to fungi, to insects, and have greater strength throughout the life of the pole. This means fewer replacements and lower maintenance costs with less service trouble. For your next job, contact one of our nearby sales offices.

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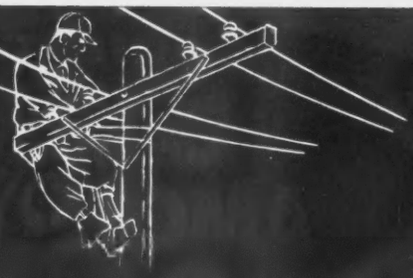
GENERAL OFFICES LOUISVILLE 2, KENTUCKY
12 FIELD SALES OFFICES TO SERVE YOU

Industry NEWSLETTER



- Young Predicts High Level Business to Continue.
- Ohio Independents Expect Record Growth in '56.
- K. L. Scott Named Temporary REA Head.

GOOD BUSINESS AHEAD

BURTON R. YOUNG, comptroller, New York Tel. Co., told New York Public Service Commission on May 23, he expects business to continue at high level through 1956 despite "soft spots" in national economy. Mr. Young offered that appraisal of the economic outlook in support of the company's request for a $15,753,000 a year rate increase. He said "certain soft spots" had appeared recently in housing in the automobile industry and in "a slackening in the growth" of the total national product.

THE OFFICIAL SAID the company sought $13,263,000 to meet the bulk of wage increases given earlier this year to 69,000 employes and a $2,490,000 increase in depreciation expenses. The company originally asked $15,759,000 boost. Mr. Young testified that the figure has been revised to $15,753,000 on the basis of corrected estimates. The PSC approved an $8 million stop-gap rate increase last December with the provision that the company could reopen the case if its expenses increased substantially.

OHIO INDEPENDENTS

GROWTH OF THE INDEPENDENT telephone industry in Ohio, second largest in the nation, will reach an all-time peak during 1956, it has been predicted in annual progress summary of Ohio Independent Telephone Assn., released by Daniel W. DeHayes, executive vice president. According to the report, the 113 member companies forming the Ohio Independent Telephone Assn. now serve more than 706,000 subscribers located throughout two-thirds of the state's land area. Of this number, more than 186,500 customers are located in rural Ohio. These companies reported an increase of 38,125 telephone stations during 1955, and it is estimated that more than 39,000 stations will be added during 1956.

OHIO INDEPENDENTS, which have 599 exchanges, are 78 per cent automatic dial operation. Last year, 27 exchanges were converted from magneto and common battery service to dial, and 39 more will be changed over this year. Ohio's Independent companies spent nearly $2 million in 1955 for improvements to existing buildings and in the construction of new central office facilities.

BUSINESS AS USUAL

IT WILL BE "business as usual" with the REA until a successor to Ancher Nelsen as Administrator has been appointed and confirmed. This is assured with the designation by Secretary Benson of K. L. Scott, Director of Agricultural Services, to direct the functions of the REA as temporary head of the Agency in the interest of uninterrupted continuation of normal day-to-day operations. All delegations of authority to REA personnel remain in full force and effect. The Deputy Administrator, the two Assistant Administrators (Roy G. Zook, electric, and J. K. O'Shaughnessy, telephone) and other personnel will continue the policies and procedures which have brought such progress to rural electrification and rural communications in recent years.

REA LOANS

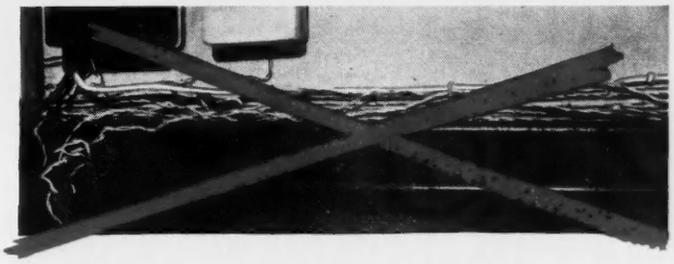
THE EASTERN Oregon Tel. Co., Pilot Rock, Ore., a new corporation, received a $539,000 telephone loan from the Rural Electrification Administration last month. The borrower is to purchase two Independents now providing magneto service at Pilot Rock and Boardman, Ore., serving a total of 742 subscribers. Service will be added to 548 customers with the REA-financed construction.

THE STOVER (Mo.) Tel. Co., a new REA borrower, was allocated $195,000. The company now serves 227 subscribers, and provides switching service to 231 families, most of whom will abandon their lines when the construction is completed. There will be, in addition, 249 new subscribers.

A FOURTH LOAN of $72,000 went to the Adamsville, Tenn., Tel. Co., which has received a total of $532,000. The funds will finance service to an additional 92 subscribers.

SINCE THE START of the Rural Electrification Ad-

When installing



INSIDE WIRING CABLE

Choose by THESE "plus" features

Appearance Attractive **brown** or **ivory** vinyl jacket.

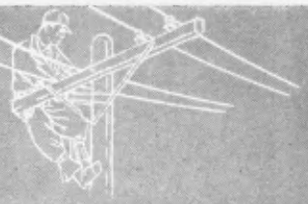
Ease of Installation Full bright color coding and special **steel rip** wire.

Performance **Staggered pair** lays to minimize cross-talk.

Install General Cable Inside Wiring Cable on every job. 6 to 76 pairs. Immediate delivery from stock. Distributed by Automatic Electric Sales Corporation.

General Cable ***. . . at your service!***

GENERAL CABLE CORPORATION, 420 Lexington Avenue, New York 17, N.Y. Offices and Distribution Centers Coast-to-Coast



(Concluded from page 10)

ministration telephone loan program, REA has allocated $165,471,000 to 194 cooperatives and $129,862,000 to 255 commercial companies, or a total of $295,333,000, the latest statistical review of the program, as of April 30, discloses. Funds advanced to borrowers total$84,-285,000 for the co-ops and $57,040,000 for the commercial companies.

NEW OWNERS

RICHARD D. HENRY purchased Conception Junction (Mo.) Tel Exchange from Mr. & Mrs. M. O. Morris . . . John V. Anderson, Irwin, Ia., purchased Alvo (Neb.) Tel. Exchange from Wm. L. Davis . . . American Communication Co., Haddam, Kans. purchased Green (Kans.) Tel. Co. . . . Stockholders of Washington Tel. Co., Meadowview, Va., voted to sell company. Inter-Mountain Tel. Co., Bristol, has submitted purchase proposal . . . Inter-County Tel. Co., Bethany, Mo., purchased Grant City (Mo.) Tel. Co. . . . Headwaters Tel. Co., North Adams, Mich., has merged with Southern Tel. Co., Brooklyn, Mich.

CROSS TEL. CO., Warner, Okla., purchased Keota (Okla.) Tel. Co. . . . Wilbur Hale and Angell Allen, officers of Arkansas Tel. Co., Inc., purchased controlling interest in Mountain Home (Ark.) Tel. Co. from Mrs. Virginia Hirsch . . . Rothsay (Minn.) Tel. Co., purchased Oscar Trondhjem Tel Co. . . . Kingdom Tel. Co. purchased Auxvasse (Mo.) Tel. Exchange and Mokane (Mo.) Tel. Exchange.

NEW ASSIGNMENTS

JOSEPH L. VAN HORN, who has been associated with the former Gary Group telephone companies in Iowa and Missouri, now in the General Telephone System, for a number of years, has been elected president of the General Telephone companies operating in Iowa, Missouri, Nebraska, and Minnesota. Headquarters for the four-state group will be at Grinnell, Ia., General reported. The companies have about 80,000 telephones in service.

EFFECTIVE JUNE 1, W. T. Autry, who has been president of the Nebraska Continental Tel. Co., will become vice president of the group. D. A. Barnes, who has been secretary-treasurer of the Iowa Continental Tel. Co., becomes Controller.

H. L. ETES, general manager of the Missouri Tel. Co., was named general plant manager. C. H. Joy, vice president and general manager of the Fairmont (Minn.) Tel. Co., is to be general traffic manager. D. C. Elliott, assistant secretary and assistant treasurer of the Missouri Tel., Co., is to be secretary and treasurer.

RATE ADJUSTMENTS

WEST OHIO TEL. CO. granted permission to increase its rates by $13,426 annually to offset increased wages to employes . . . Illinois Commerce Commission granted rate increase, totaling $28,000 annually, to the Western Illinois Tel. Co. . . . The Kansas Corporation Commission authorized United Tel. Co. to increase its rates $35,577 annually to about 18,000 subscribers in 11 Kansas towns. At the same time it allowed McKrae Tel. Co. to raise its rates $19,137 a year to 5,000 customers in 13 towns. The KCC turned down the request of United, the second largest telephone utility in Kansas, to raise rates in 51 other towns. The company had asked for a $72,031 annual increase in the 65 towns it serves. KCC chairman Harry Snyder Jr., said the increases allowed will permit the company to net a 6.12 per cent return.

HIGHLIGHTS

FRED HARRIS named pres. Southern Tel. Co. Brooklyn, Mich. He succeeds Wade Lora . . . Wm. Buckholtz, named gen. mgr. Chatham (Mich) Tel. Co. . . . Charter granted to Blue Valley Tel. Co., Oketo, Kans. Incorporators are: E. C. Koeneke, Bremen; Paul T. Schotte, Herkimer; Henry Sedlacek and Lynn Collins, Marysville; H. H. Voet, R. D. Breunsbach, and M. H. Kramme, Home, Kans. . . . P. W. Wolf named general plant mgr., State Area, Illinois Bell Tel. Co. He succeeds D. L. Brown, retired . . . Floyd H. Knapp, named chief engineer, Northeastern Area, Ohio Bell Tel. Co. He succeeds the late George H. Raudebush.

NET INCOME of General Tel. Corp. and its consolidated subsidiaries for 3 months ended March 31 was $8,505,000, General Tel. Pres. Donald C. Power reported May 21. After dividends on preferred stocks of parent companies, the consolidated net income applicable to General common stock for the quarter amounted to $8,329,000 or 72 cents on the common stock outstanding. Earnings for 1955 were $2.63 a share.

DEATHS

CHARLES WELLINGTON CHEENEY, 82, founder, of Chesaning (Mich.) Tel. Co. . . . EDWARD A. PURCELL, 78, of Illinois Consolidated Tel. Co., Mattoon, Ill. . . . FOREST R. LLOYD, plant manager, Midstate Tel. Co., Munnsville, N. Y.

It goes where business is!

REYNOLDS ALUMINUM OUTDOOR TELEPHONE BOOTH

More Revenue – Less Maintenance. It's so quick and easy to go after extra-revenue business *where* it is . . . with lightweight, easy-to-set-up and easy-to-relocate Reynolds Aluminum Outdoor Telephone Booths! For here's a practical, portable booth of *rustproof* aluminum designed to *attract* new business, *cut* maintenance costs. Aluminum never rots, cracks, splinters, warps or decays. Needs no paint for weather protection. Cleans easily. *And* cooler in summer, too . . . because aluminum reflects up to 95% of the sun's radiant heat!

Simple to install anywhere. Weighing only 360 lbs. erected, the Reynolds telephone booth can be assembled fast with unskilled labor. Bright, attractive, it is easy to locate night or day, provides more roominess and convenience than ordinary booths. A bright beacon when indoor locations are inaccessible at night or weekends and holidays, this handy booth stimulates *additional* paystation usage around the clock!

Follow the Trend to Outdoor Booths. Investigate this new source of *extra* revenue now. Here's new, frequent usage business over and above regular indoor paystation installations. Install attractive Reynolds telephone booths outside supermarkets, shopping centers, service stations, along the highway, at housing projects, airports and other busy traffic centers. Write for specifications and complete details. *Address: Reynolds Aluminum Fabricating Service, 2000 South Ninth Street, Louisville 1, Kentucky.*

The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

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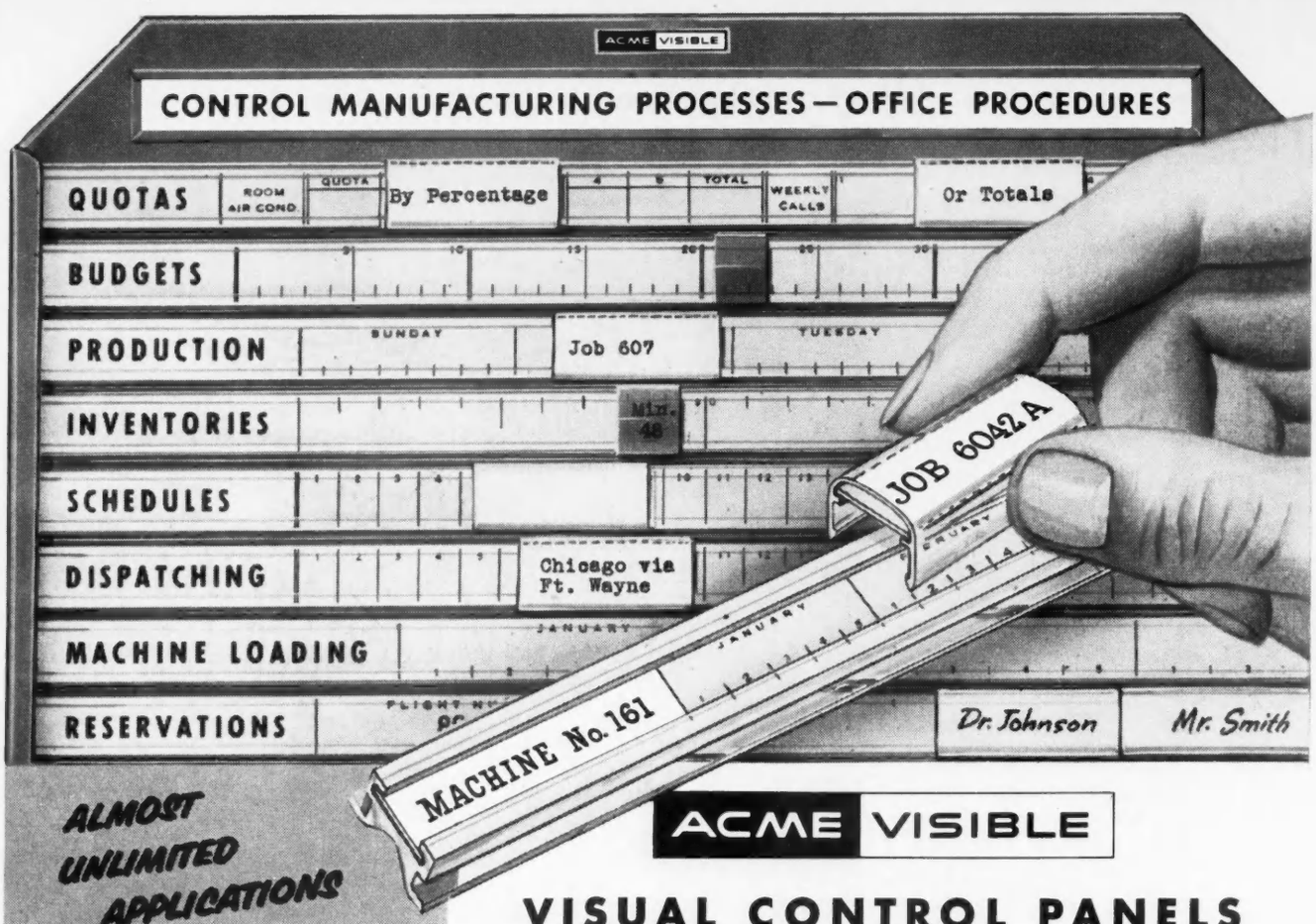


ACME VISIBLE

VISUAL CONTROL PANELS

Chart Action, Indicate Trends, Show Results, Permit Comparison, Picture Organized Facts for Analysis and Decision.

Complete flexibility with limitless signalling and charting possibilities . . . Easily adapted to your individual record requirements.

Lightweight panels contain clear plastic tubes which are individually removable and may be shifted from one position to another . . . Clarity of tube provides full legibility of contents.

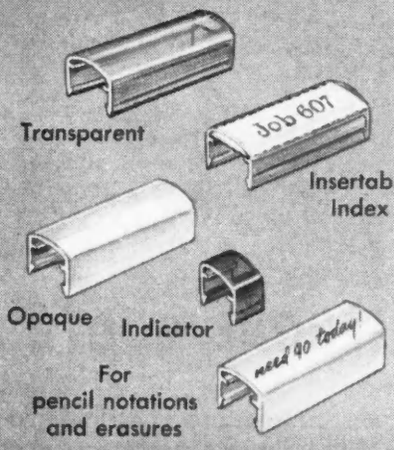
Signals snap on or off at any point . . . Hold position until positively moved . . . Slide smoothly back and forth . . . By-pass freely.

Insertable index feature afford triple signalling potential: by position, by color and by legend of index.

Ask the man from Acme to show you examples—

ALMOST UNLIMITED APPLICATIONS

OVER-RIDING SIGNALS



TUBE INTERIOR SIGNALS

Panels Contain 25, 50 or 100 Tubes Available in 11, 30, and 40 inch widths

ACME VISIBLE RECORDS, INC. CROZET, VIRGINIA

S656

☐ Send us more information on Visual Control Panels.

☐ We are interested in Acme Visible equipment for _____ records.
KIND OF RECORD

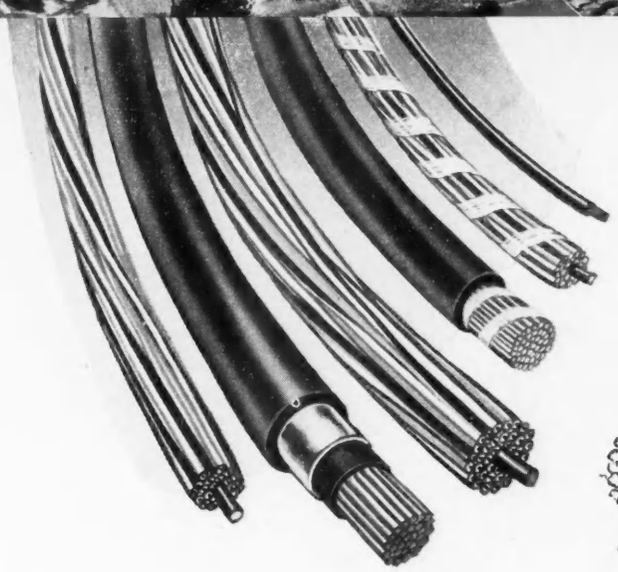
☐ Have representative call. Date_____ Time_____

Company_____ Attention_____

Address_____

City_____ Zone_____ State_____

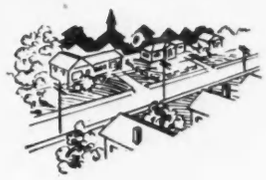
FROM THIS MODERN FACTORY COMES TOP QUALITY *Wires & Cables* FOR THE TELEPHONE INDUSTRY



EXCHANGE AREA CABLE

No. 24, 22 and 19 AWG — Soft bare copper, polyethylene insulated, cabled, polyethylene taped, aluminum shielded, polyethylene jacketed. For aerial and duct service.

URBAN DISTRIBUTION WIRE



No. 24 Copper — Color Coded Polyvinyl insulated Conductors cabled around galvanized steel messenger. Available in 16 pairs only. No. U.D.C. - 1619-U.

INTERIOR WIRES

No. 22 Bare Copper Tw. Pr. Brown or Ivory
No. 22 Bare Copper Triplex Brown or Ivory
No. 19 Bare Copper Tw. Pr. Brown or Ivory
No. 19 Bare Copper Triplex Brown or Ivory
No. 22 Bare Copper Tw. Pr. Jacket Overall Brown or Ivory
No. 22 Bare Copper Triplex Jacket Overall Brown or Ivory

JUMPER & SWITCHBOARD WIRES

No. 22 Tin. Copper Tw. Pr. Red and White
No. 22 Tin. Copper Triplex Red-Black-White
No. 19 Tin. Copper Tw. Pr. Red and White
No. 19 Tin. Copper Triplex Red-Black-White

INSIDE WIRING CABLES — TYPE "D"-24

PVC Insulation and Ripcord Jacket

6 pr. No. 24 B.C. — Overall PVC Jacket O.D. .310
12 pr. No. 24 B.C. — Overall PVC Jacket O.D. .380
16 pr. No. 24 B.C. — Overall PVC Jacket O.D. .420
21 pr. No. 24 B.C. — Overall PVC Jacket O.D. .490
26 pr. No. 24 B.C. — Overall PVC Jacket O.D. .520
51 pr. No. 24 B.C. — Overall PVC Jacket O.D. .710
76 pr. No. 24 B.C. — Overall PVC Jacket O.D. .830

RURAL DISTRIBUTION WIRES — REA APPROVED

Polyethylene insulated — color coded polyvinyl jacketed conductors. 19 insulated conductors cabled around steel messenger. 3 pr., 6 pr., 11 pr., 16 pr.

Contact us for name of nearest distributor.

SEND FOR TECHNICAL SPECIFICATIONS AND PRICES.

THE REX CORPORATION

The REX CORPORATION

101 HAYWARD ROAD, WEST ACTON, MASS.

GUY-GRIPS eliminate clamps and reduce strand required . . . do not slip! Tests prove that even extra high-strength steel strand breaks outside the Guy-Grip when subjected to impact, repeated load or gradual tension. Save 50% installation time.

FOR "C" RURAL

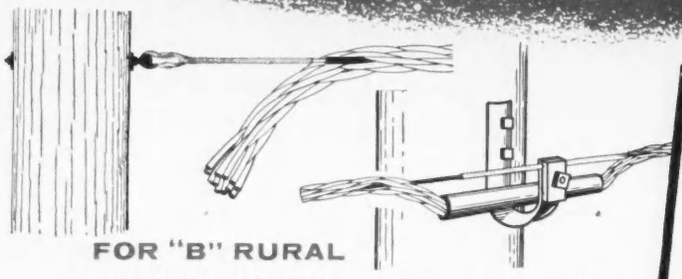
TANGENT SUPPORTS AND DEAD-ENDS

Made of stainless steel for corrosion resistance, these Preformed Tangent Supports and Dead-Ends are coated with Neoprene to cushion their grip and uniformly distribute holding pressure. Designed for 2 - #14 or 2 - #12 "C" Rural conductors, they assure a low radial pressure over the entire holding area and prevent slipping, thus eliminating a major cause of resagging. Note multiple-wire bail of Dead-End.

for the Telephone Industry . . .

PREFORMED PRODUCTS

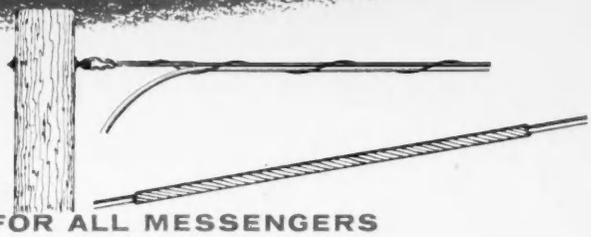
Used and praised by a growing list of leading Telephone Companies, Preformed Products are the result of *progressive* ideas backed by *extensive research* and *sound engineering* insuring the ultimate in *field performance. Ask your Telephone Supplier for complete details of their exclusive advantages.*



FOR "B" RURAL

PREFORMED DEAD-ENDS are the easiest-to-install, non-slip answer to dead-ending. Can be installed without cutting messenger.

PREFORMED ARMOR RODS protect insulated messengers against clamping pressure or abrasion damage.



FOR ALL MESSENGERS

PREFORMED DEAD-ENDS AND SPLICES are the surest, safest and non-slip means of splicing and dead-ending all sizes of messengers. Easy to install . . . no tools required.

PREFORMED LASHING RODS, individual Preformed Rods designed to lash cables to messengers require no clamps. Neat. Easy to install. No tools needed. Can be removed and reused.

FOR DROP-WIRES

DROP-WIRE DEAD-ENDS of stainless steel . . . Neoprene coated . . . cushion the grip; eliminate abrading or cutting through insulation; provide low radial pressure over the entire holding area . . . no damaging concentrated pressures. No slippage or cold flow. Multiple-wire bail prevents fatigue failure.

FOR SELF-SUPPORTING CABLE

PREFORMED DEAD-ENDS AND LINE GUARDS with their large-area, uniform, low-pressure contact surfaces are the only devices in their classification that can be used safely with plastic-covered multiple cable. They were specially designed upon request for this use.

Made in accordance with or for use under one or more of the following U.S. Patents: 2,275,019; 2,587,521; 2,609,653; 2,691,865; other patents pending.

PREFORMED LINE PRODUCTS COMPANY

5349 St. Clair Avenue • Cleveland 3, Ohio

MODERN LIVING DEMANDS COLOR

IN TELEPHONE INSTRUMENTS

Now, Kellogg offers the famous K-500 telephone in 8 striking colors

Conveniently located color telephones add a distinctive note to the decor of any room.

in modern homes and offices

THE DEMAND FOR COLOR MEANS MORE REVENUE FOR YOU

FULL COLOR K-500

Available in 8 beautiful decorator colors: Modern Ivory, Raspberry Red, Charcoal Grey, Maize Yellow, Sable Brown, Wedgewood Green, Desert Sand, Mediterranean Blue.

STRIKING TWO-TONE K-500

In 8 colors in combination with black. The parts that are handled are in practical black while the body of the telephone is in brilliant color. It is easy to convert the standard K-500 into a two-tone telephone . . . simply remove the black housing and slip on a new color housing.

Now there is an important, *extra* reason for enjoying the convenience of an extension telephone . . . Kellogg's new decorator styled telephones add a colorful accent to any room.

Bedroom telephone . . . convenient and comforting to have near-by at night . . . now color adds that extra touch.

Living room telephone . . . within easy reach of father's comfortable chair *and* in a special color to fit the decor.

Kitchen telephone . . . a real convenience to the busy homemaker . . . in glamourous colors.

Laundry-recreation room telephone . . . saves running up the stairs . . . and a perfect spot for a bright color accent.

Business offices . . . The color telephone is becoming a "must" for modern business offices. Greys and browns match office fixtures . . . bright contrasting colors are popular too.

Boost Revenue—Sell the charm of color—along with the convenience of that extra telephone.

KELLOGG
A DIVISION OF IT&T

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Modern Ivory

8 EXCITING NEW COLORS

Raspberry Red

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Charcoal Grey

Maize Yellow

Sable Brown

Desert Sand

Mediterranean Blue

Shown here are the striking decorator colors chosen for Kellogg's full color and two-tone K-500 telephones. Ask your Kellogg representative to show you samples of the new telephones in color. He will also tell you about the recent color-preference survey which was made to aid you in ordering your K-500 telephones.

ORDER NOW

Demand is heavy for these distinctive colorful phones, so order now to be sure of prompt delivery.

KELLOGG
A DIVISION OF IT&T

Washington NEWSLETTER

- Hamil Succeeds Nelsen at REA.
- E. M. Webster to Retire from FCC.
- Initial Decision issued on Blackhills Video Co.

COMMUNICATIONS PROBLEMS

THE FEDERAL Communications Commission has advised Chairman Warren G. Magnuson (D., Wash.) of the Senate Interstate & Foreign Commerce Committee that it could furnish factual information on most of a variety of common carrier communications problems outlined by the Senator in a letter to the Commission, but that to produce legislative recommendations would require more funds and manpower than it now has available.

The Commission's statement was in response to a letter from Chairman Magnuson calling on the agency to be ready to make a report on the problems at an overall investigation of domestic and international communications which the Senator said he plans to launch when Congress convenes next January.

There has been no indication as to what, if anything, will follow the exchange of correspondence. Senator Magnuson, of course, is a candidate for reelection to his Senate seat this year, and is opposed by Washington Governor Arthur Langlie.

Exchange of correspondence between Chairman Magnuson and the Commission, which began early in May, has become known in Washington government circles interested in communications, but there was no public lease of the documents at the time this column was written. It was first reported in Telecommunications Reports, the editors of which serve as Washington correspondents for Telephone Engineer Publications.

It was reported that Senator Magnuson based his letter on the Commission's fiscal 1957 budget jurisdiction, which said that the increase of 11 common carrier positions provided would enable it to attack some of the "soft spots" in its common carrier work, and outlined a series of common carrier matters which it said should be taken up.

In addition, the Senator referred to the Interstate Commerce group's justification for special funds for its work this year, made public last January, which cited many of the same problems.

Senator Magnuson's letter, it is understood, was written in his dual capacities as Chairman of Interstate Commerce and as the head of the Senate Appropriations Independent Offices subcommittee, which handles funds for the FCC.

Declaring that the issues raised are substantially matters which warrant study, Chairman Magnuson referred to the fact that the FCC did not come before his Appropriations subcommittee on its fiscal 1957 funds, as adopted by the House, and sought information as to whether the Commission would have sufficient funds to analyze the problems mentioned, or whether additional money would be required.

Topics outlined by the Senator for study included the following: the question of separation of oral and written domestic communications, discussed at length in the funds justification statement of the Senate committee and in earlier reports; the Bell System's proposal for a multichannel private line service "volume rate" tariff, now the subject of an FCC proceeding; and the whole area of international communications issues.

Stating that he plans to proceed with an exhaustive investigation, he called on the Commission to be ready with its recommendations when the new Congress convenes in January.

In reply, the FCC said that it could provide factual information on most of the problems with its present staff, either based on information already at hand or resulting from current proceedings or investigations in several of the areas mentioned.

Personnel limitations indicate that the response would be in the nature of a progress report, however, the Commission declared. In any event, the amount of work necessary to formulate legislative proposals could not be carried out by the present Commission force, it noted, and even if funds were available it would be virtually impossible to obtain trained personnel who could handle the extra work by January.

In a few of the international telegraph areas mentioned it is understood, the Commission said it would be unable to furnish satisfactory factual data because of the complexity of the issues or circumstances which surround them.

The anticipated appointment of former FCC Commissioner T. A. M. Craven to a new term on the Com-

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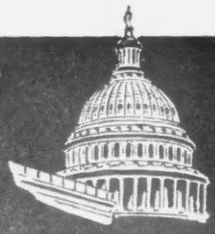
Washington NEWSLETTER



(Concluded From Page 21)

mission, beginning July 1 to run to June 30, 1963, has been sent to the Senate by President Eisenhower. At the same time, the President accepted Commissioner E. M. Webster's request to retire when his present term expires, and expressed his "appreciation" for the nearly half-century of government service performed by Commissioner Webster.

A routine hearing on Commissioner Craven's appointment was scheduled by the Senate Interstate & Foreign Commerce communications subcommittee, but no confirmation difficulty was anticipated. When the Virginia Democrat was named to the Commission in 1937, some questions were raised about his industry associations as a consulting radio engineer, and this matter was expected to be the subject of some discussion during the current hearings. Commissioner Craven has been in consulting practice since he left the FCC in 1944.

Commissioner Webster, retired Coast Guard commodore who headed Coast Guard communications during World War II, was an FCC staff member prior to World War II after his first retirement from the Coast Guard. It is thought likely that he will wind up in some other government capacity after his FCC tour concludes.

An acknowledged authority on television allocations who is expected to make important contributions to the FCC's efforts to find its way out of the ultra high frequency television dilemma, Commissioner Craven said he also is "particularly interested in the use of radio for both safety and all types of mobile services, particularly aircraft and ships." He pointed out that this was his "first love," and that during his Navy service (he is a retired commander) he had more experience with this type of communications than any other.

Commander Craven twice was drafted from consulting engineering practice by President Franklin D. Roosevelt, once to become Chief Engineer of the Commission in 1935 and again for his 1937-44 service as a Commissioner.

RADIO RELAY SYSTEM

IN WHAT COULD DEVELOP into a fairly important policy case, an initial decision looking toward grant of the application of the Blackhills Video Co. for a privately-owned common carrier radio relay system to relay programs picked up off-the-air from Denver, Colo., television stations and transmit them to a community antenna system in Rapid City, S. Dak., has been issued by FCC Examiner Basil P. Cooper.

Mr. Cooper's initial decision came two months after a hearing on the applications at which the American Telephone & Telegraph Co. Long Lines Department, intervening in the case, presented testimony on its off-the-air television service offering and the ability of the Bell System companies to meet the needs of customers.

If no objections were filed and no reviews were ordered by the Commission, the initial decision would become final in 40 days.

Mr. Cooper commented, "AT&T stresses the fact that the monthly rate quoted by it in January and February of 1956 to prospective customers is substantially less than the monthly rate which is to be charged by the applicant herein. In considering this fact, however, it must be kept in mind that the record does not reflect the rates quoted to prospective customers at or about the time Blackhills filed its applications, and further that both the monthly and contract terminations rates quoted in January and February of 1956 were substantially less than the rates quoted in 1955.

"The AT&T convention must also be considered in the light of the fact that the Blackhills proposal has been under consideration for more than two years, the route has been surveyed, and the application filed. AT&T, on the other hand, has not filed an application to construct facilities into Rapid City, does not intend to do so unless there is a request to it for such service, and in the event there is such a request, to require a contract termination charge substantially in excess of that proposed by the applicant herein."

NEW ADMINISTRATOR

THE NEWLY-APPOINTED Rural Electrification Administrator, David A. Hamil, has a background which rather closely assembles that or outgoing REA Administrator Ancher Nelsen. Mr. Nelsen's administration of the agency is generally regarded as having been on the plus side, so it would appear that he has a worthy successor in Mr. Hamil.

A Republican, and a farmer who is also in the cattle feeding business, Mr. Hamil, like Mr. Nelsen, has been active in politics in his native state. He has been serving as Speaker of the state General Assembly, while Mr. Nelsen served as Lieutenant Governor of Minnesota.

Mr. Hamil's principal background in the cooperative field has been with the electric co-op which serves his farm—again, close similarity to Mr. Nelsen.

Also like Mr. Nelsen, the new Administrator is reported to have long-range political objectives which go beyond the REA post.

The nomination is subject to Senate confirmation, and there is not expected to be any particular difficulty about approval of Mr. Hamil. — *By the editor of "Telecommunications Reports."*

a flick of the finger

means more revenue for you

Anyone who needs two-line convenience in a single instrument is a "hot" prospect for a Stromberg-Carlson No. "1573" Two-line Telephone.

You can boost your income by promoting this service to small offices, stores, doctors, restaurants, garages, real estate agencies—a host of commercial subscribers.

Easy to Use

With the No. "1573" two trunks terminate in one smartly styled instrument. By using the handy selector switch in the base, the subscriber may initiate or receive calls on *either* or *both* lines and hold all outside calls. A center switch position is also provided on the telephone which may be used, if desired, to connect the telephone to an internal communication line. A separate pushbutton and buzzer box is also available which may be used for intercom signaling.

For additional details on this revenue-boosting telephone contact your Stromberg-Carlson representative.

STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

SALES OFFICES:

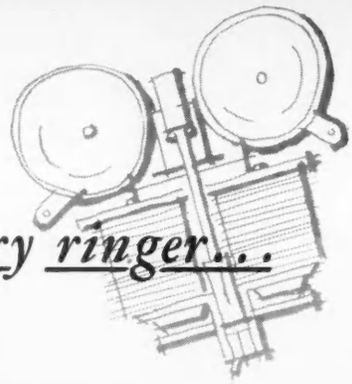
Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3

Call comes in on trunk line A. Subscriber flicks switch to proper position and lifts receiver to answer call.

During conversation line B rings. Subscriber asks caller on A to wait, then presses Hold button. Flicking switch to right, he answers call on line B.

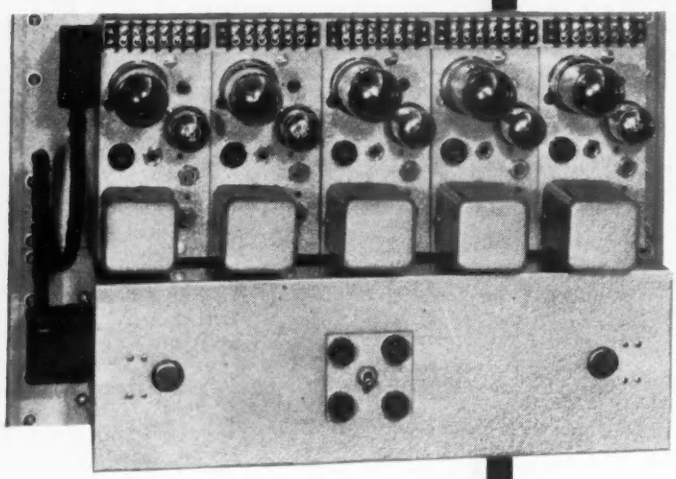
Caller on B asks question which requires answer from someone else in office. Subscriber holds trunk B by pressing its Hold button, returns switch to center position, uses intercom pushbutton to call for the information.

Subscriber reconnects with held calls by pushing switch to proper position. He completes both calls without asking anyone to call back or using more than one 'phone.



Behind every ringer . . .

there must be a dependable ringing supply



Here's what users have to say about the "dependability" of the KELLOGG *Electronic Ringing Generator*

"From the first day that we placed the Kellogg Electronic Ringing Generator in service we have seen our trouble due to ringing power disappear . . ."

WELLINGTON TELEPHONE CO., WELLINGTON, OHIO

"Routine maintenance has been reduced to practically zero..."

LOS GATOS TELEPHONE CO., LOS GATOS, CALIF.

"This generator is handling the ringing requirements for 6,000 subscribers, and we are convinced that it is overworked at times. However there is no visible indication to that effect."

WOOD COUNTY TELEPHONE CO., WISCONSIN RAPIDS, WISC.

"Their compactness, ease of installation, minimum mounting space and reliability of operation give them preferred rating by all of our equipment personnel."

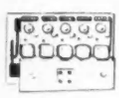
TELEPHONE SERVICE COMPANY OF OHIO, LIMA, OHIO

Why the Kellogg Electronic Ringing Generator Gives Continuous, Trouble-Free Performance in Installation After Installation:

- **No moving parts, — no contacts to adjust.**
- **Excellent frequency stability with respect to room temperature, humidity, ringing load, input power and voltage variations.**
- **Maximum ringing power with lower power consumption.**
- **Sound straight forward circuits . . . minimum number of components operating well below rated capacities,**

AND MANY OTHER FEATURES THAT MEAN SUPERIOR RINGING SERVICE.

Get All the Facts on the Kellogg Electronic Ringing Generator . . . right away!



KELLOGG SWITCHBOARD AND SUPPLY COMPANY
79 West Monroe St., Chicago 3, Illinois

Send me complete information on the Kellogg Electronic Ringing Generator.

Name_____ Position_____

Company_____

Address_____

City_____ Zone____ State_____

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A DIVISION OF IT&T

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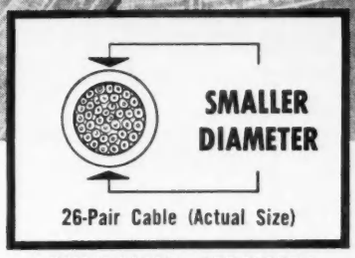
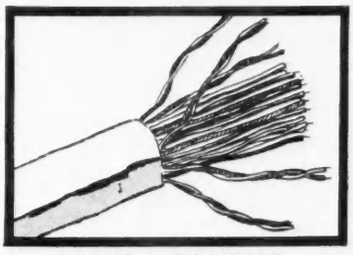
Your needs designed this **Ankoseal**® INTERCOM CABLE

SMALLER DIAMETER, LOWER COST, FASTER INSTALLATION



BULKINESS REDUCED!

FASTER STRIPPING!



COLOR CODING!

Ankoseal inside wiring cable has been redesigned with smaller diameters, and features that make for easier installation at lower cost. The result is an intercom cable with exceptional advantages:

1. *Substantially reduced diameters . .* 2. *Steel rip-wire built in to speed stripping . .* 3. *Full color coding to identify each pair . .* 4. *Worthwhile cost savings.*

Available with 6 to 51 pairs of solid, soft copper conductors, in 22 or 24 gauge. PVC insulation and brown jacket. (Ivory jacket also available on special order.)

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Ankoseal®

'The first all-plastic cable'

THE ANSONIA WIRE & CABLE COMPANY • 111 MARTIN ST. • ASHTON, R. I.

New! Rugged Heavy-Duty Public Utility Truck

INTERNATIONAL Four-Wheel-Drive Model S-164 (4x4)

GVW—18,000 lbs.

Wheelbases—130", 142", 154", 172"

Engine—INTERNATIONAL 264 cu. in. Black Diamond

Front Axle—7,000 lbs. capacity

Rear Axle—14,500 lbs. capacity

Transmission—4-speed

Hauls bigger loads, anywhere!

Here is a new four-wheel-drive INTERNATIONAL truck with a whopping big 18,000 lb. GVW rating . . . with sure-footed traction and extra power to go over the most rugged terrain.

This new "field and road" four-wheel-drive unit is especially built with generous size components for on- and off-highway operations. For example—husky frame has full load-length reinforcements that extend beyond the front spring, front-mounting brackets. Heavy-duty front-end construction permits the installation of A-frame for setting poles or mounting hole digger. Roomy Comfo-Vision cab is built to endure the twists and strains of this rugged operation.

For auxiliary power, *both* front and rear power take-offs are available, including the exclusive INTERNATIONAL full-torque type on the transfer case. You can even pull a fully loaded pole trailer with this INTERNATIONAL "work horse."

On good roads, front axle is disengaged. You have the driving ease, comfort and convenience of a conventional truck. Why not investigate the profit-possibilities of this new S-164 (4x4) on your operation? Contact your INTERNATIONAL Dealer or Branch for all the details.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

World's most complete line of Public Utility Trucks

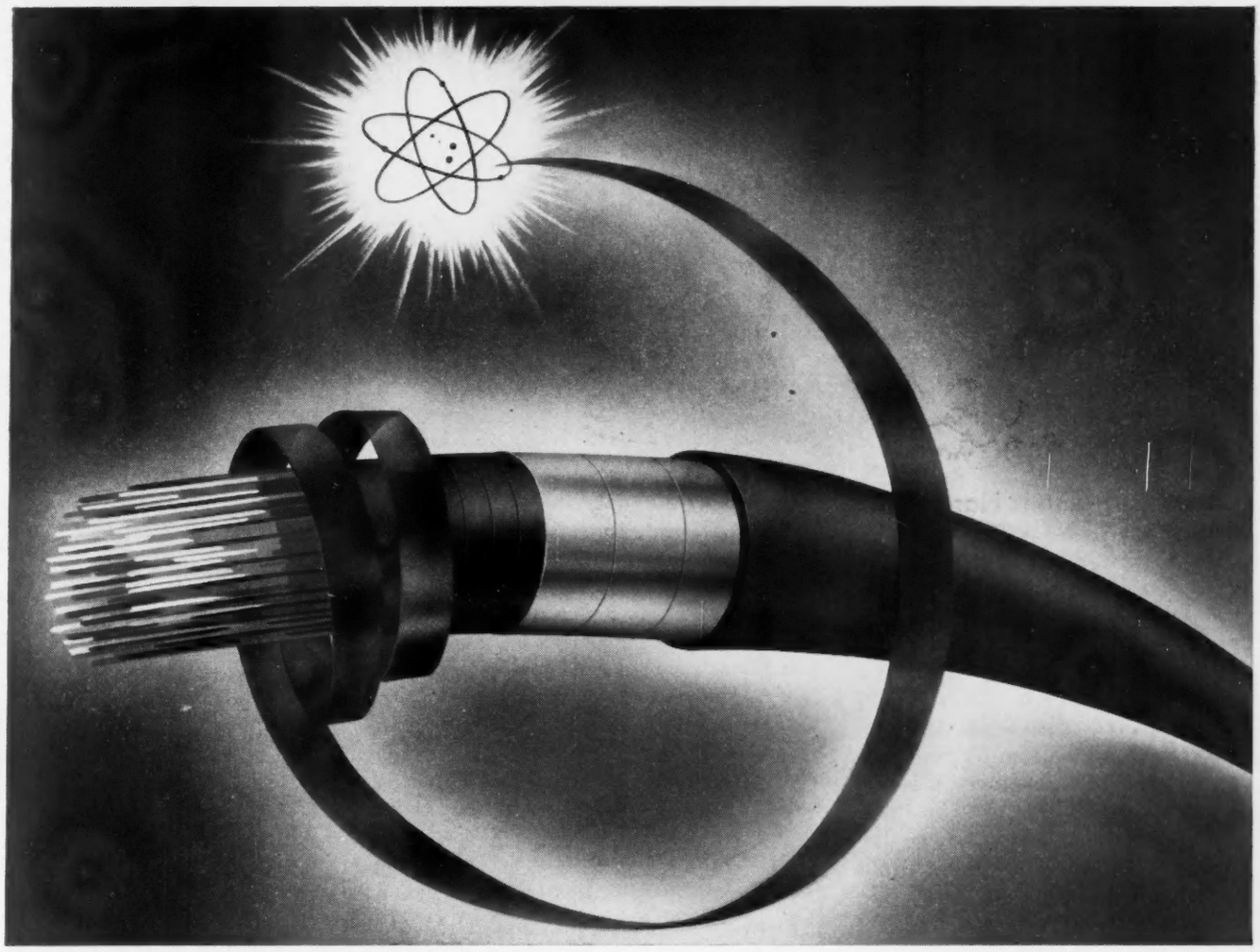
Six factory-built all-wheel-drive models—7,000 to 26,000 lbs. GVW. Conventional and COE, 4- and 6-wheel models—4,200 to 90,000 lbs. GVW. Whatever your transportation needs, there's an all-truck built INTERNATIONAL that will stay on your job longer, at less cost.

INTERNATIONAL® TRUCKS

All-Truck Built to save you the BIG money!

Motor Trucks • Crawler Tractors • Construction Equipment
McCormick® Farm Equipment and Farmall® Tractors

"Capacitance Deviation Now less than 1½%"



reports Superior Cable Corporation—first in the telephone industry to use G-E IRRATHENE® irradiated polyethylene tape①

SUPERIOR reports that G-E Irrathene tape provided SUPERIOR TELEPHONE CABLE with practically uniform capacitance—deviation less than 1½%—for every pair of conductors. Dielectric strength of the cable was doubled.

Excellent electrical properties

Irrathene tape is irradiated polyethylene—a result of General Electric advances in the science of radiation chemistry. It offers high corona starting voltage, low corona intensity, excellent voltage endurance, high dielectric strength and insulation resistance. These properties do not vary even on direct immersion in water. Non-melting, Irrathene tape withstands temperature surges of even 200 C and higher for limited periods.

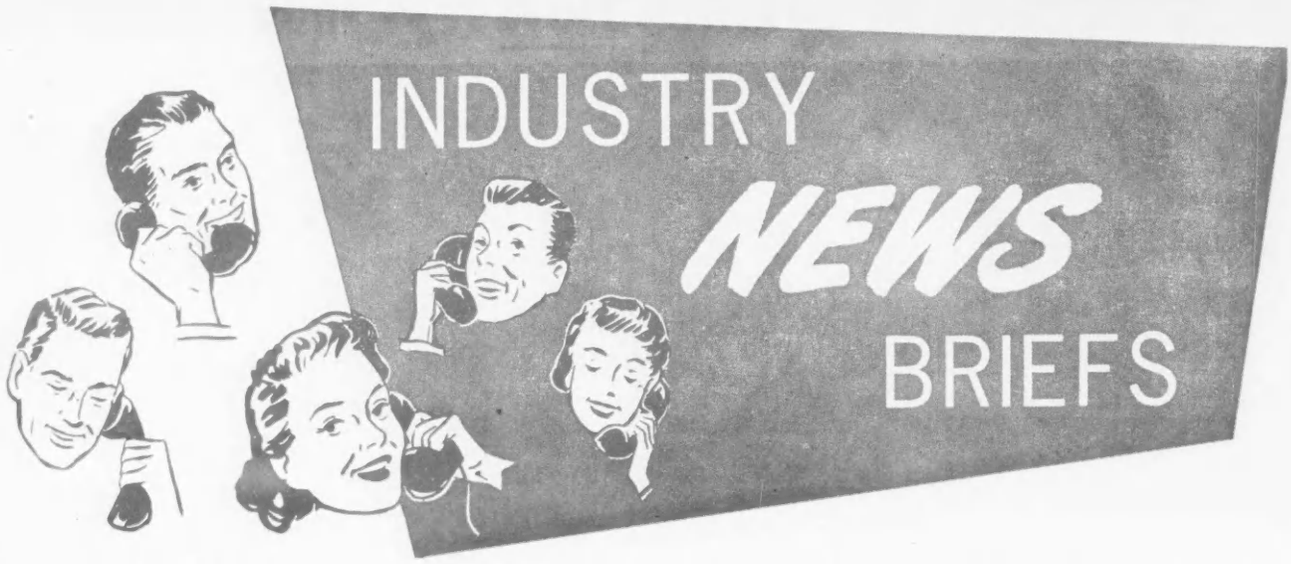
Where can YOU use G-E Irrathene tape to improve wire and cable, transformers, capacitors, motor coils or other kinds of electrical equipment? Easy to apply, G-E Irrathene tape may cut your costs—because its excellent electrical properties make less insulation necessary!

Write today for more information to: General Electric Company, Chemical Development Department, Section T, Pittsfield, Massachusetts.

①Patents Applied for

Progress Is Our Most Important Product

GENERAL ELECTRIC



General of Illinois Names R. C. Ross to New Post

R. C. ROSS, vice-president and general manager of the Illinois Central Telephone Co., Clinton, has been promoted to general traffic manager of the General Telephone Co. of Illinois and the Illinois Central Telephone Co., according to an announcement made by Burton W. Saunders, president. The promotion, effective June 1, is part of the move to transfer the executive offices of the Illinois Central Telephone Co., to the general offices of the General Telephone Co. in Springfield.

Saunders stated that C. R. Aagaard, assistant secretary and assistant treasurer of the Illinois Central Telephone Co. was also promoted to general accountant of the General Telephone Co. effective June 1.

Mr. Ross became vice-president and general manager of the Illinois Central company in December, 1950. Prior to that time he had served as general traffic superintendent of the Illinois Telephone Co., Bloomington, Ill., and Portsmouth district manager of the Ohio Consolidated Telephone Co.

Mr. Aagaard transferred to Clinton as auditor of the Illinois Central Telephone Co. in July, 1944, from Grinnel, Iowa, where he had been an accountant for the Iowa Continental Telephone Co.

Union Tel. Announces Personnel Changes

WILLIAM J. HAMM, vice president and general manager of Union Telephone Co., Owosso, Mich., has announced the following personnel changes: Effective May 15, Walter Hickey, material supervisor, general plant department, to staff assistant to the traffic superintendent; James Dudewicz commercial representative, Owosso District, to material supervisor, general plant department; Kenneth Ehlman, commercial representative, Adrian District, to assistant district manager, Owosso District; and Byron Phillips wire chief, Adrian District to commercial representative, Adrian District.

Wisconsin Pupils Learn About Telephone Usage

PUPILS in the fifth grade at Washington School, Fond du Lac, Wis., are experts, junior grade, in telephone communications.

They recently completed a course that included a visit to the local telephone office and the use of a miniature telephone system in their classroom. The communication teaching aids program is under the sponsorship of the Wisconsin Telephone Co.

Under the system, the children set up and actually operate a battery powered "telephone company" with three "subscribers" in their classroom. The Fond du Lac fifth graders went one step farther and built a cardboard telephone switchboard labeled with the name of each pupil and gave a special telephone program for their parents, including an original song, "Hello, Hello."

Pupils stationed at both "home phones" and at the third telephone, labeled "switchboard," practiced making and completing calls for information, ordering, conversation and emergencies.

The course is designed not only to acquaint children with the technical background of communications, but also to teach them telephone manners and add new words to their vocabularies.

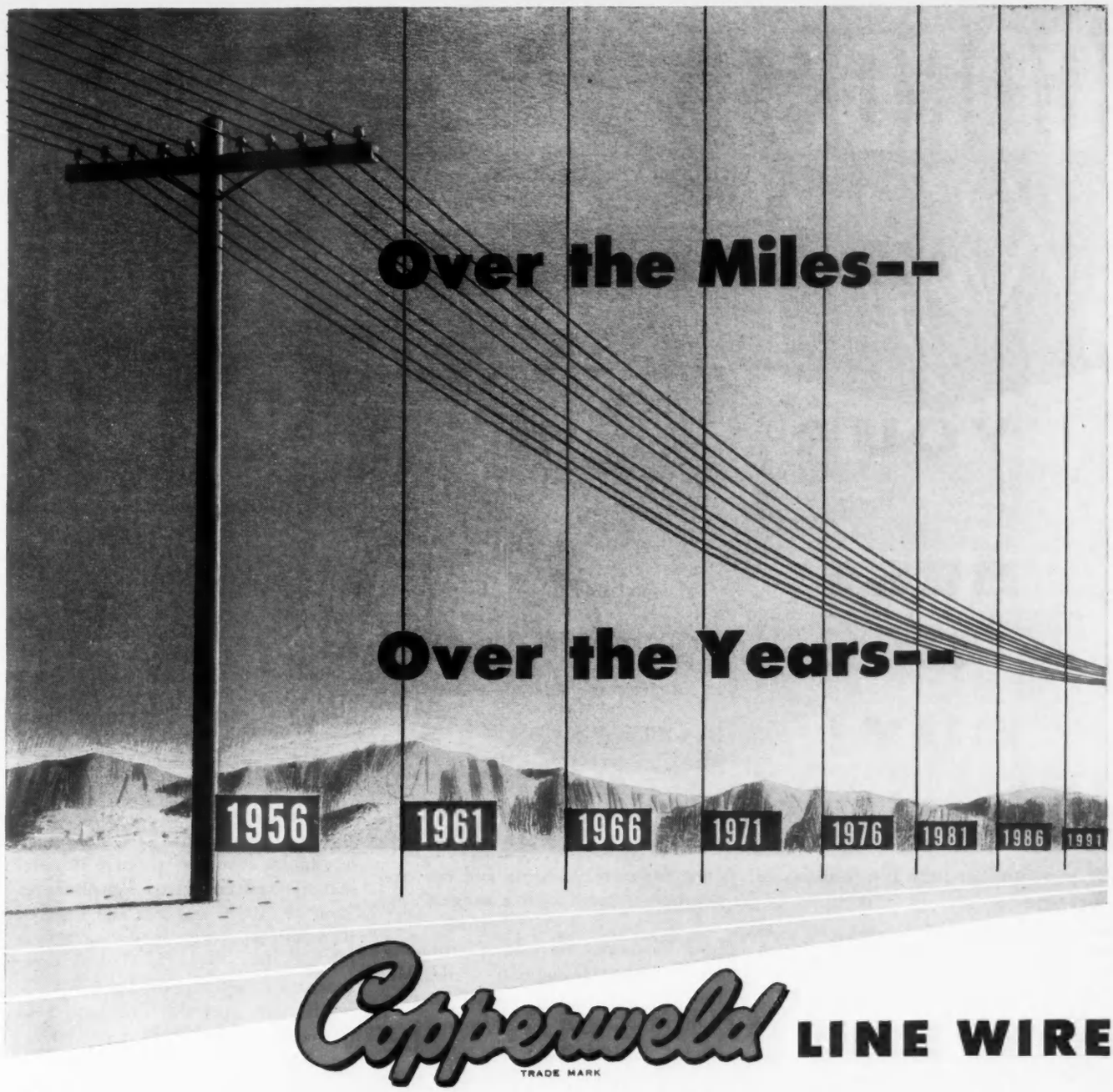
A milestone was reached in the development of the Illinois Central Telephone Co. with the recent installation of the company's 25,000th telephone in the home of Attorney and Mrs. Wirt Herrick of Clinton, Ill. Shown in the picture are MRS. WIRT HERRICK, using her new extension telephone; CHARLES H. ALSUP, installer-repairman and S. C. HERZBERGER, district manager of the Clinton and Sullivan districts of the company.

Rate Hike Granted Chillicothe, Ohio, Company

PLEADING that present rates do not make enough earnings to attract capital, the Chillicothe (Ohio) Telephone Co., won an emergency rate increase last month, from the Public Utilities Commission (PUC).

The company asked for a permanent rate increase but the PUC engineering study will not be finished until late this year. The company said it needed help immediately.

The emergency rates will add about $70,000 to gross annual revenue. The permanent increase asked



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Also
Right for Carrier
— a Copperweld
Bonus Value!

When Copperweld* Line Wire goes up, it's up to stay. Non-rusting Copperweld has the permanent high strength to resist even the worst weather conditions year after year. Thus, you get longer service life—lower operating costs. At the same time, you get better talking qualities, because Copperweld has the best electrical conductance of any long-span conductor. What more could you ask for in a line wire?

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WIRE AND CABLE DIVISION *Glassport, Pa.*

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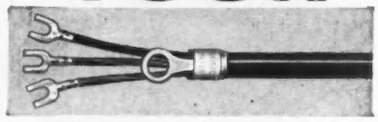
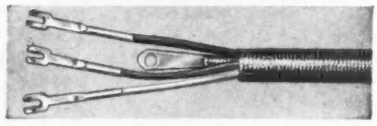


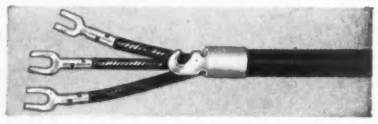
BEST

NYLON



BUY!

COTTON



Are you familiar with the features of these fine cords?

NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

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would add $425,123. One-party telephones in Chillicothe and the five other Ross County exchanges of the company now cost $4.25 a month; two-party telephones cost $4. The company is to revise schedules to produce the $70,000 additional permitted by the PUC order; the permanent increase would raise the one-party rate to $7.75 and the two-party rate to $6.75. The emergency increase does not affect toll calls.

The PUC, in granting the emergency rate increase, said that failure to attract capital would injure the company's business and cause it to fail to fulfill its obligation to the public.

Company officers have testified that operating costs have risen sharply in recent years and that liabilities have increased while assets have decreased.

A commission spokesman said that proposed permanent rate increase would average about 75 per cent, one of the largest increases ever asked by an Ohio company.

Hawaiian Tel. Co. Makes Personnel Changes

ORGANIZATIONAL changes made recently by Hawaiian Telephone Co. involved setting up of a new department for merchandising and new appointments for Island managerships.

R. S. Lowrey, chief engineer, has been appointed executive assistant to vice-president Douglas S. Guild. Mr. Lowrey will coordinate neighbor-island activities for the company, and be the representative on joint pole committees on all islands. He will serve as chairman of the Facilities and the Material Standards Committee and assist Mr. Guild in the administration of his duties. Mr. Lowrey has been with the company since 1934. He has served as manager of the Island of Hawaii and as plant manager.

Ray Alden, supervisor of Transmission and Protection Engineering, was made chief engineer. Mr. Alden joined the company in 1951. He holds a B.A. degree in electrical engineering from Stanford University, attended M. I. T. Navy Radar School, and is a member of the Institute of Radio Engineers. Before coming to Hawaii, he was with Western Union Telegraph in Portland, Oregon.

Also effective April 1, Stanley Hodgins became the new manager for the Island of Kauai, replacing William K. Salsbury, who moved to Oahu as assistant to Plant Manager Louis Robello. Stanley Hodgins, a native Honoluluan, joined Hawaiian Telephone in January, 1940, and has since served in many capacities, including a year on Kauai as wire chief and three years as supervisor on Hawaii.

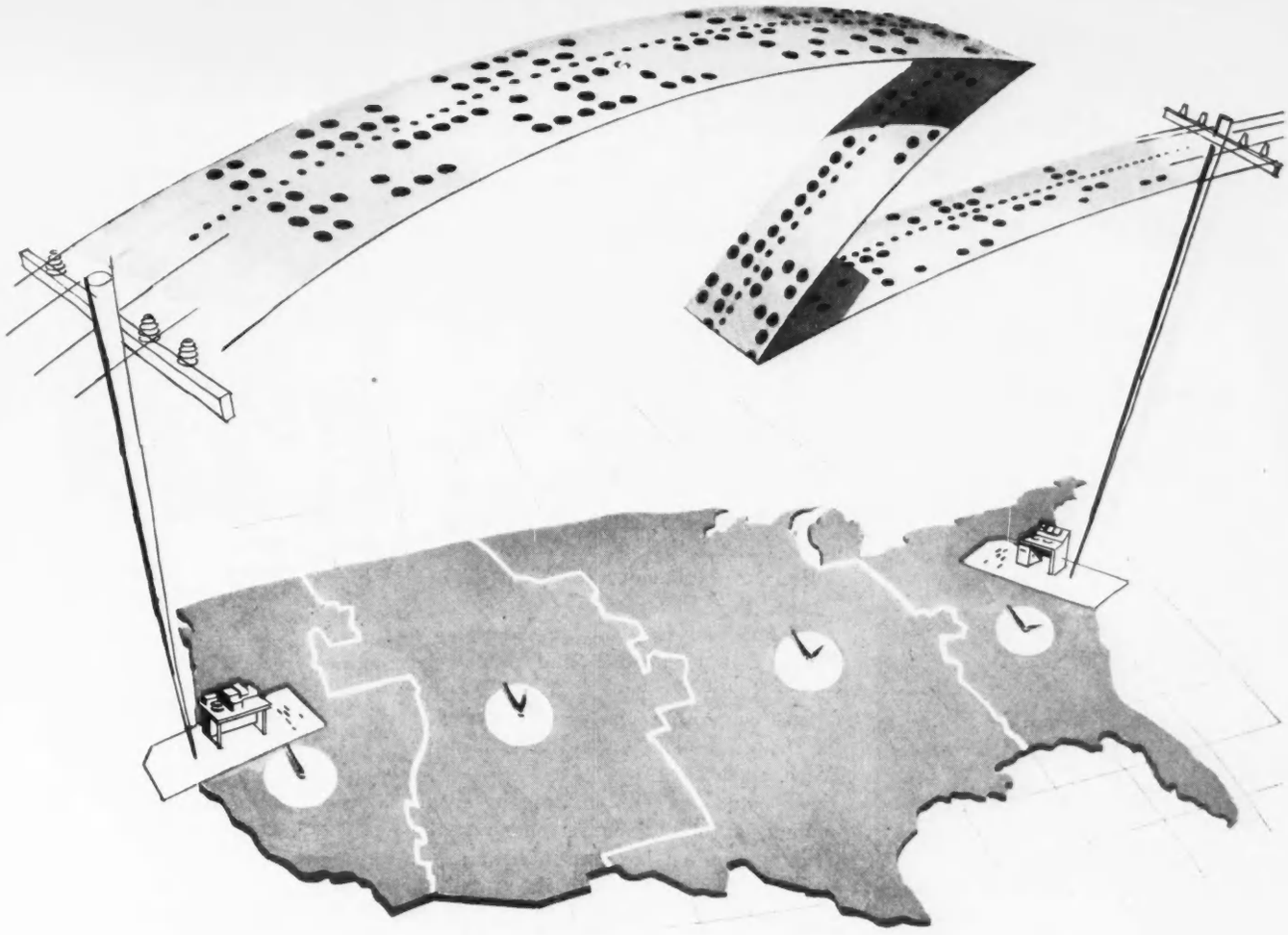
Effective May 1, Hawaiian Telephone Co. is instituting a department for Merchandising, the director of which will be F. J. P. James, former manager of Maui Telephone System. Mr. James will work with other department heads and island managers in planning, organizing, and coordinating all phases of merchandising for the company. Mr. James has been with the company for more than 20 years and served in various departments before he was appointed manager of the Maui System in 1948.

Ernest L. Halford, business office manager in Honolulu, was appointed manager on Maui. Louis D. Hinton, rate engineer, became business office manager.

S-T-R-E-T-C-H . . . . Like a scene from a Rube Goldberg cartoon, operators in the Santa Paula, Calif., traffic department of General Telephone Co. of Calif., are temporarily working under awkard conditions, while readjustments and equipment additions are being made in the office. The temporary switchboard arrangement requires that operators stretch to reach temporary subscriber lines placed in brackets at the top of the switchboard.

Samuel B. Dibble Dies

SAMUEL B. DIBBLE, 67, general plant supervisor of the Citizens Independent Telephone Co., Terre



Send punched card data – by wire –

. . . another IBM SERVICE

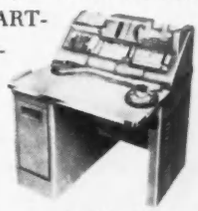
More and more businesses are depending on leased wire facilities to leap the barriers of time in the transmission of business data.

With the IBM Card-To-Tape and Tape-To-Card Punches, communications companies have a new opportunity to perform an even greater service for commercial customers. At the same time, you'll gain increased circuit usage on a long-term basis.

With this IBM equipment, businessmen in your area can transmit and receive daily data on production, inventory and sales to and from remote locations. The IBM Card-To-Tape Punch transfers punched card data into your standard tape. This tape is then used for transmitting the data over commercial wires. At the other end of the line, across county or continent, duplicate punched cards are produced. From these new cards, management at remote distances gets the reports in time for effective management action.

In this growing economy, more of *your* customers will be using these IBM data processing methods to gain *centralized* control of *decentralized* operations. As always, IBM-trained personnel will assist you in every way to make prompt customer installations.

For all the facts, contact your local IBM representative, or write: COMMUNICATIONS DEPARTMENT A56, International Business Machines Corporation, 590 Madison Avenue, New York 22, N. Y.



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Dependable Power

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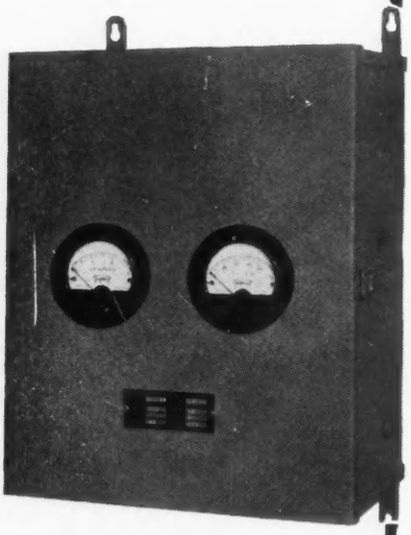
of Service!



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In sizes and capacities to meet every telephone power requirement.

See your Schauer Jobber.
Write for Bulletin 4516.

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4516 Alpine Ave., Cincinnati 36, Ohio

Haute, Ind., died May 14, after suffering a heart attack. Mr. Dibble had been associated with the telephone industry for 54 years.

A native of McGregor, Texas, he began his career in the telephone industry at the age of 14 as a night operator with the Brazo Valley Telephone Co. at McGregor. In 1913 he transferred to Waco, Texas, and was associated with that company in various capacities until November, 1926 at which time he moved to Terre Haute to accept the position of equipment supervisor, when the Citizens company installed automatic equipment. He was made plant supervisor in 1936 and was promoted to general plant supervisor in 1944, the position he held at the time of his death.

He was a member of Methodist Temple, the Lions Club, the Chamber of Commerce, Elks Lodge No. 86, Izaak Walton League and Euclid Lodge No. 573, F. and A. M. He was a past worshipful master of George N. Denton Lodge, F. and A. M. in Waco.

Mr. and Mrs. Dibble were in attendance at the Indiana Telephone Association annual convention held in Indianapolis on Wednesday and Thursday, May 9 and 10, and heard their son, Allen Dibble, director of public relations for National Homes, Inc., address the convention.

John Leckenby Joins Northern Ohio Tel. Co.

A NATIVE of England, John H. Leckenby, took over last month as general traffic superintendent of the Northern Ohio Telephone Co., Bellevue, succeeding E. T. Burgess.

Leckenby began his telephone career in 1936 as an engineer. During World War II he served in the Royal Air Force as Staff Signal Officer. After five years with the British Air Ministry he was placed in charge of a 7000-line manual telephone exchange. His next assignment was as traffic superintendent in Brighton, England.

JOHN LECKENBY

Through the United Nations program, Mr. Leckenby gave telephone training to men and women from Cyprus, India, Algeria, and other countries. He also did the demonstration work in connection with the lecturing of Sir Robert Watson Watt, the inventor of radar.

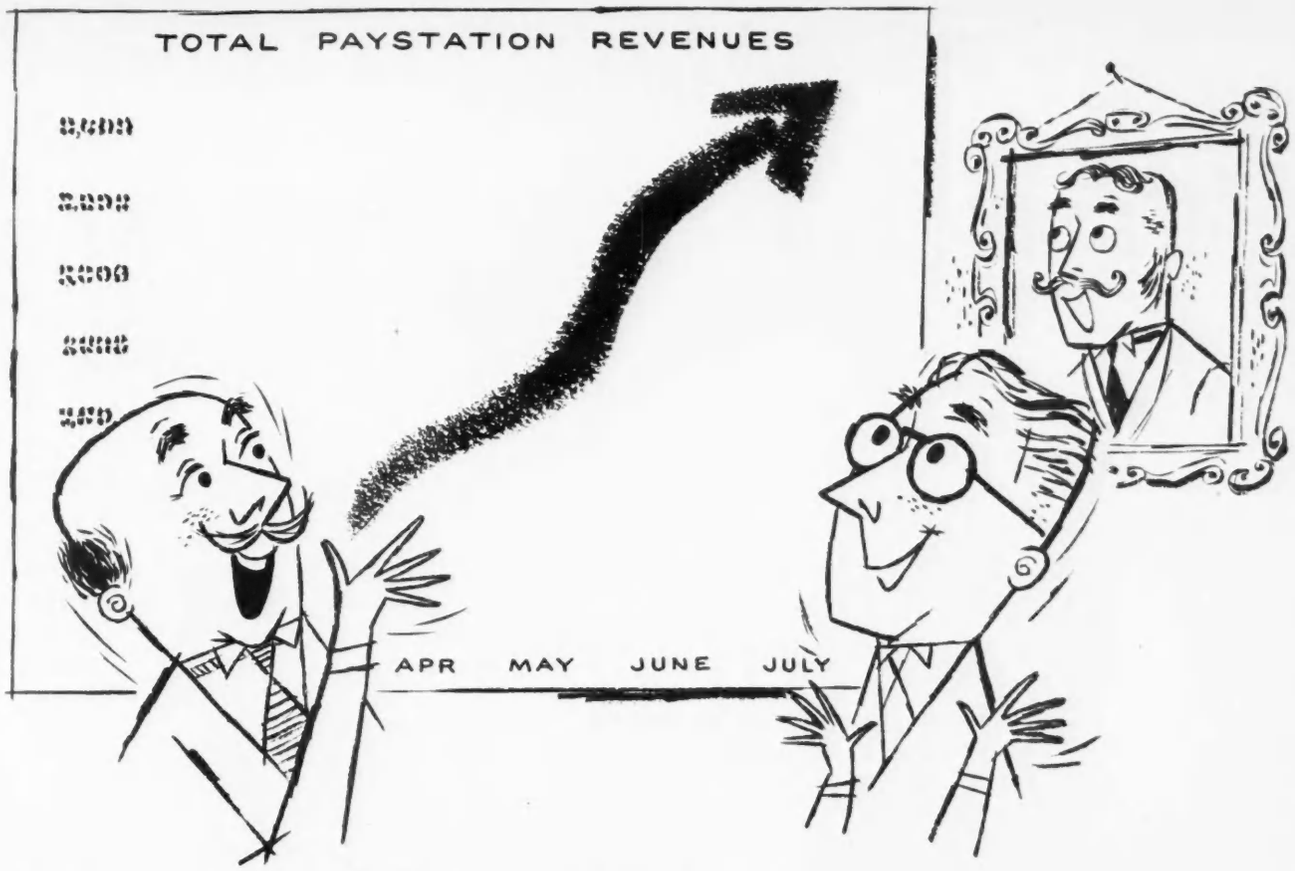
Mr. Leckenby came to America two and one half years ago and has been associated with the Elyria Telephone Co. and the General Telephone Co. of Ohio before taking over his present assignment.

JOHN MUDRAK, who started his telephone career with The Elyria (Ohio) Telephone Co. in 1946 shortly after his discharge from military service, has been appointed general plant superintendent. He takes over his duties in the midst of an improvement and expansion program which includes operating an office building to house a new dial system to be placed in service, it is expected, in 1957.

C & D Batteries Appoints Dallas Service Engineer

C & D BATTERIES, INC., Conshohocken, Pa., has announced the appointment of Devon D. Gilman to handle battery service in the Dallas, Texas, area. He will work out of the office of A. N. Ohlfest, area sales representative for the firm.

Mr. Gilman was with R. M. Pease Associates, C & D representative at Jersey City, N. J.



"things are looking up... since we put in OUTDOOR PAYSTATIONS!"

Even the president's mustache curls upward at this climbing revenue curve. Credit for the rise in revenue goes to the new outdoor paystations, *and to the employee who suggested installing them.* (He's practically a hero to company management... and to the grateful public!)

Autelco Paystations, in attractive booths, marked with big, colorful signs, are bringing in more revenue to companies everywhere. Located at well-lighted, busy highway junctions, drive-ins, supermarts, their convenience is proving irresistible.

Why not do yourself and your company a good turn? Write today for our Survey Simplifier...it'll help you put paystations at the spots that pay *best.* Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

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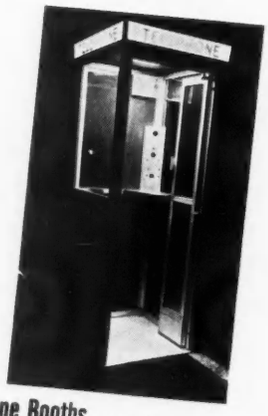
Automatic Constant Voltage Charger—operates without moving parts. Compensates for changes in input voltage and load. Single-Phase Flotrol in the 24 and 48 volt types are available in range of sizes from 1 to 24 amperes. LORAIN PRODUCTS CORP.



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Designed for Maintenance-Free Operation—The Cook P-L-X Cable Terminal requires no stubbing, splicing nor potting. Only plastic loop cable terminal that can be protected. When ordering, specify cable size (6 thru 51 pair. COOK ELECTRIC CO.

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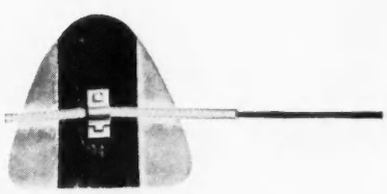
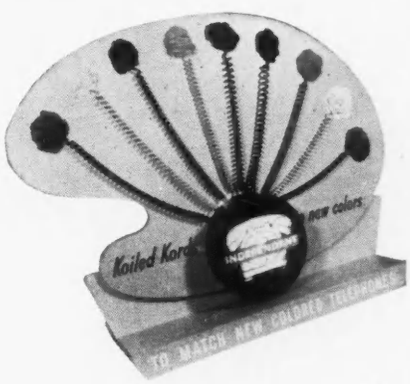
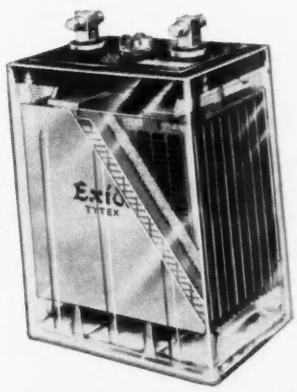


Preformed Line Guards . . . for Plastic Self-Supporting Cable. No tools required. Line guards are accurately formed to fit snugly without using clamps or clips to hold ends secure. PREFORMED LINE PRODUCTS CO.



Koiled Kords — Customer satisfaction and long service life is assured with Koiled Kords retractile telephone cords. Black cords retractile for replacement. Black cords available for use on all new equipment. Made by KOILED KORDS, INCORPORATED.



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Exchange Area Cable for aerial and duct use. TELECABLE* has polyethylene insulation and sheath, excellent transmission qualities. 202 Pair and smaller. Approved by REA. *TELECABLE is a trademark of WHITNEY BLAKE COMPANY.

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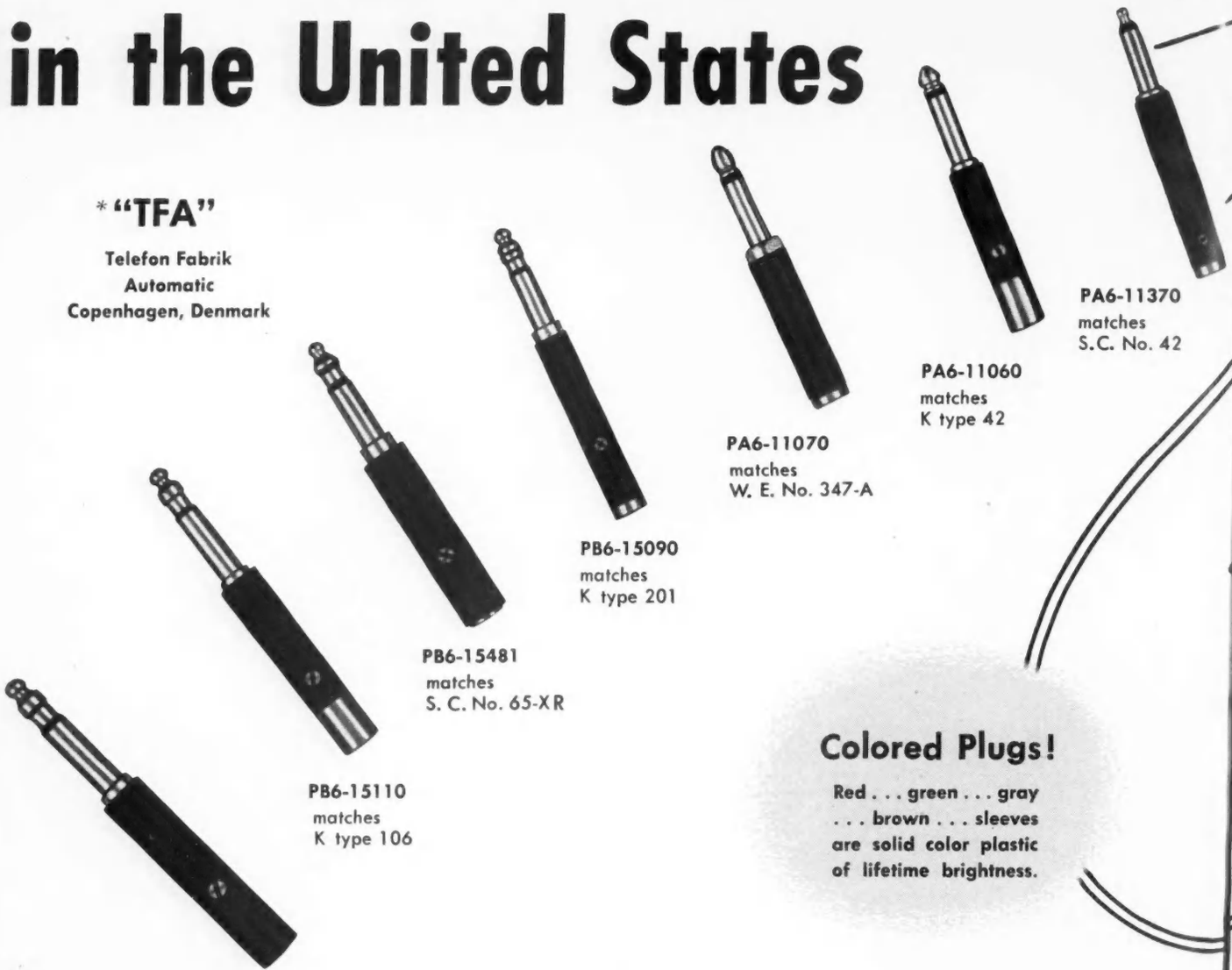

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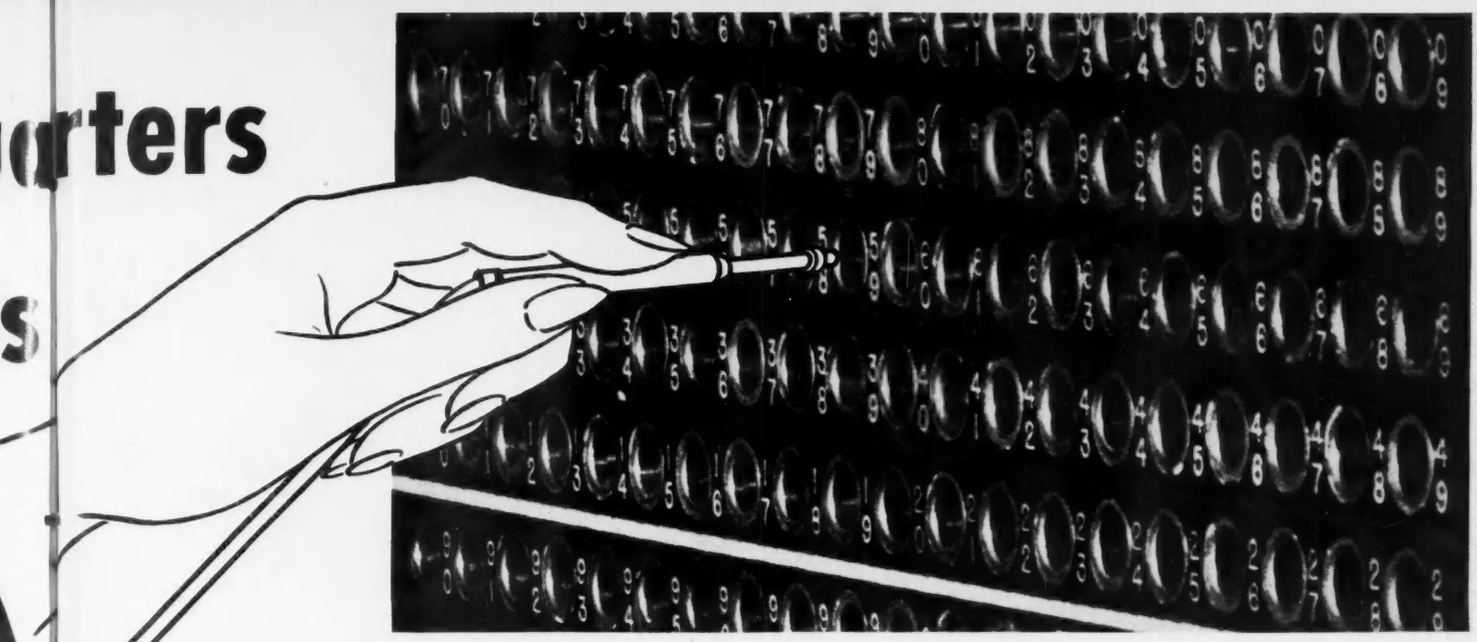
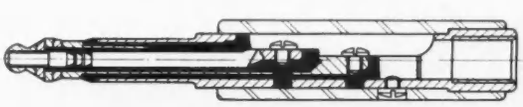


We are pleased to announce an agreement with Telefon Fabrik Automatic of Copenhagen, Denmark under which North will act as a National distributor for the world-famous TFA switchboard plugs. The Buckeye Telephone and Supply Company of Columbus, Ohio, the Suttle Equipment Company of Lawrenceville, Illinois and the Telephone Repair and Supply Company of Chicago, Illinois will continue serving their many customers as dealers for TFA plugs.

TFA Switchboard Plugs with their superior insulation, precision construction and fine finish are engineered for perfect dimensional fit for all standard American jacks. Accurate gauging and machining, plus a secret molding process enables TFA to deliver plastic-insulated machined parts as a solid unit switchboard plug assuring long wear.

The molded plastic insulation between all conductor sections, as illustrated in the cross-section drawing, is permanently locked in position by the hole in the outside brass shank which fills with plastic when molded. The inside core cannot slip or turn.



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NORTH ELECTRIC COMPANY

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*IN 1955 . . . MORE UTILITIES BOUGHT

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SERVICE BODIES

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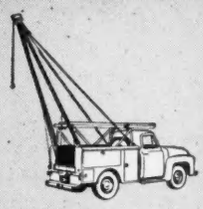
Powers-American can furnish the *just right* body for any service job—standardized for greatest economy . . . modified-standard, to fit individual job needs . . . custom-made, to meet specific operating requirements.

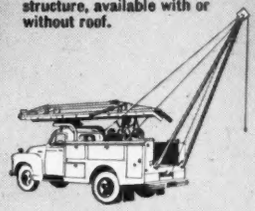
Whether you have one truck or the largest fleet . . . you'll find it worthwhile to get details from Powers-American next time you need service bodies for your operation.



SERIES 350 Bodies have an under-floor winch, a fold-over derrick, and an extension ladder. Compartments are equipped to carry a variety of service tools, parts, and materials.

SERIES 25 Bodies are available in standard models equipped specifically for telephone, electric, gas, or water meter installation and service.

SERIES 44L Bodies have same construction features as Series 44 Bodies described above . . . plus a shelf-equipped superstructure, available with or without roof.



SERIES 450 Bodies, designed for light duty construction and maintenance work, are equipped with a revolving aerial ladder, an underfloor winch, and an easy-to-use derrick.

SERIES 44 Bodies . . . in 75", 90", and 104" lengths . . . are designed for service work in any phase of the utility industry. Equipped with bins, racks, material hooks, and adjustable shelves. Available with optional items to fit individual work needs.

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EDITORIAL

"The Customer's Buck"

MANY WORDS HAVE BEEN written on the subject of "Merchandising Telephone Service." On an occasion or two we have tackled the subject, and a few weeks ago *Henry T. Inman*, vice president of the Bell Telephone Company of Pennsylvania, had his "say" when he presented a few facts and figures that prove telephone men and women *must* continue their merchandising activities if telephone growth is to keep pace with the growth of other industries.

Addressing the recent convention of the Pennsylvania Independent Telephone Association, Mr. Inman warned—"*We could rub our hands and say "things look pretty good for the telephone industry'—but before we jump to that conclusion, let's consider this: There are many other industries competing for the consumer's dollars . . . .*"

To prove in his point Mr. Inman said some indication of this competition in the past is the advertising expenditure of American business which in 1940 was $16 per capita — in 1950 was $38 and in 1955 was $53 per capita.

"We also have some results of this competition," Mr. Inman said. "By 1954, 88 percent of American families had electric refrigerators, 78 percent had electric washers, 71 percent had TV sets, and only 60 percent had telephones. 98 percent of homes had radio — and over 70 percent had a second radio. Only about 13 percent of homes with a telephone had an extension . . . Over 12 percent of car-owning homes had a second car — practically no telephone-equipped home had a second residence line . . . ."

The figures given by Mr. Inman demonstrate that many of the telephone industry's competitors for "*the customer's buck*" who started in business long after the telephone industry have moved fast and are well ahead in developing the residence market for their products.

"They did this," said Mr. Inman, "because they did a better job of merchandising their products. And we can be sure of this — they and other new industries are going to continue to merchandise their products. We have it in our power to develop the telephone business under the favorable economic conditions ahead — but to do it we'll have to compete successfully with not only the radio, TV, and automobile industries but with suppliers of modern kitchens, air conditioners and many other items . . . ."

It is encouraging to note that many telephone companies *are* meeting today's competition with merchandising programs to meet not only the public's demands but its desires as well. This is as it should be.

We realize that life may be a bit easier for the company that decides to live on demand and do nothing about creating more demand for service. We agree that the needs for financing, construction and organization would be at a slower pace. In fact as the percentage of families with service reached high levels, growth rates could taper off and become practically dependent on population growth.

This, we think, would be a sorry state of affairs. If it came to pass the industry would lose much of the vigor, the initiative and the organization spirit that have been fine by-products of the tough expansion problems its members have met and met successfully.

That's why we hope more and more companies will make the switch from operating on a demand basis to operating on a program that will permit them to aggressively develop the market for their services.

As we see it, the increased attention of more industry members to merchandising telephone services will bring the telephone industry a better share of each "customer's buck." And that "buck" is an elusive thing. It has been that way in the past. It will become more so in the future. Only aggressive promotion — the kind competitive business constantly employs — will enable the telephone industry to collect its rightful share of each "*customer's buck.*" Of that we feel sure.

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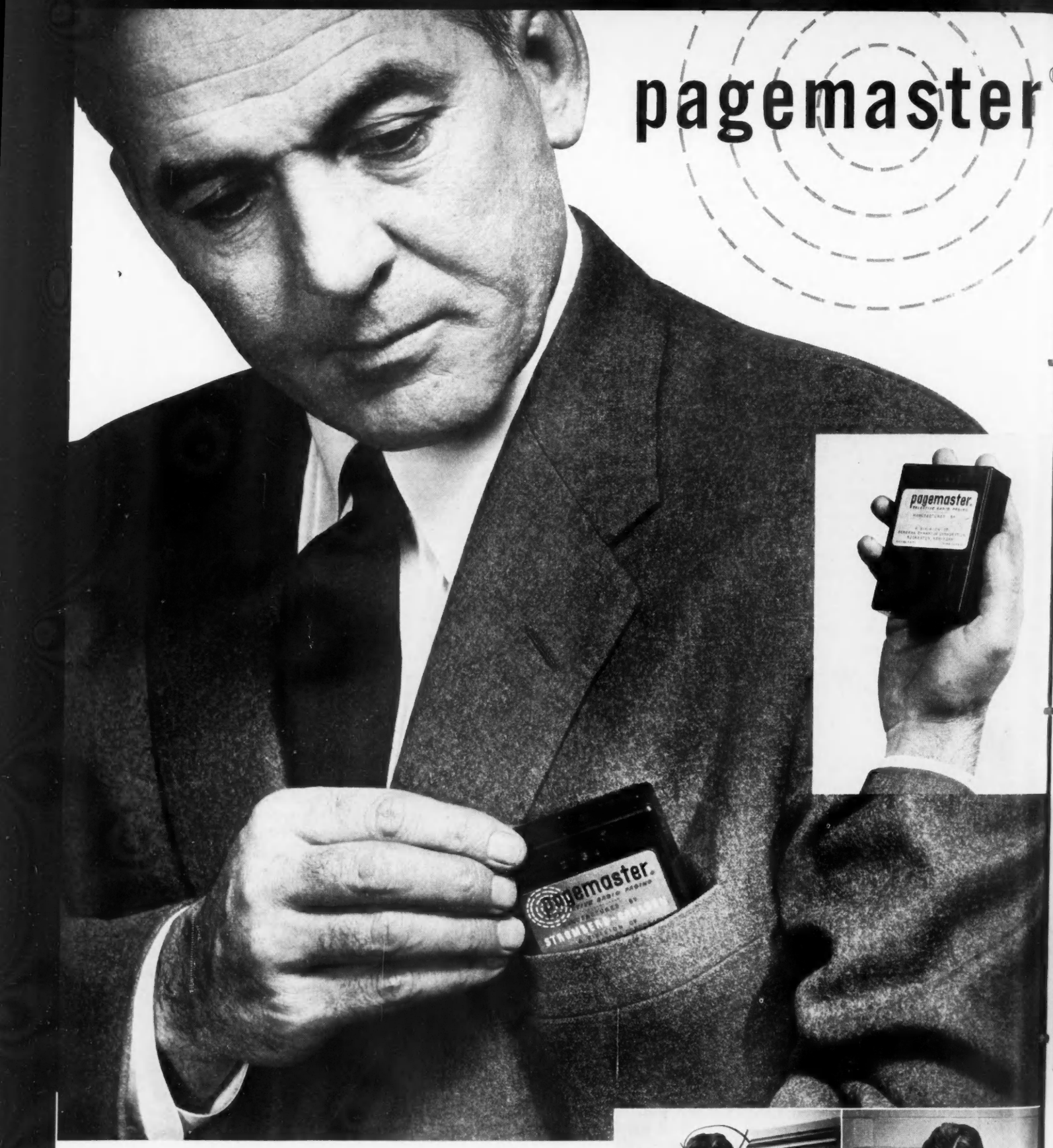
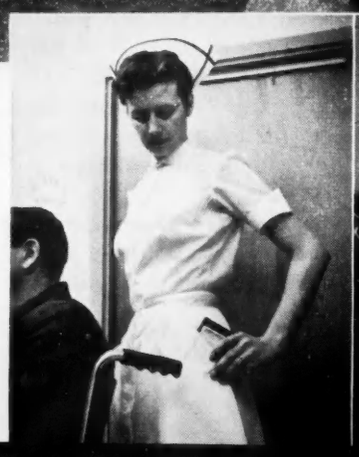


IDEAL FOR HOSPITAL USE...

Because it gets calls through quickly and quietly, Pagemaster is especially well suited for hospital use.

Signal units may be made available to administrative staff, nurses, and other circulating personnel in the building. Physicians may pick up a unit upon arrival at the hospital.

Two typical applications of Pagemaster in a hospital are shown at the right . . . a nurse and a laboratory technician.



in his pocket means profit in yours

He may be a business executive, hospital administrator, or holder of a key position in any other organization.

He's a busy man, often away from his desk. How can he be reached *quickly* when he's needed?

Pagemaster—the *selective* radio paging system—supplies the answer with dramatic speed and efficiency. The signal unit (receiver), no bigger than a package of cigarettes, notifies him when his—and only his—call is "on the air." Whether he's in the next office or half a mile away, a pleasant buzzing tone tells him he's wanted. All he has to do is pick up the nearest 'phone.

Since *Pagemaster* signalling will originate at his telephone switchboard, his interest in this product means added revenue for you through leasing of the equipment.

Pagemaster meets a vital need for a legion of your subscribers: industrial plants, construction projects, oil fields, hospitals, civil defense organizations—wherever difficult internal communications problems exist.

For additional information on Pagemaster call, wire, or write

STROMBERG-CARLSON COMPANY

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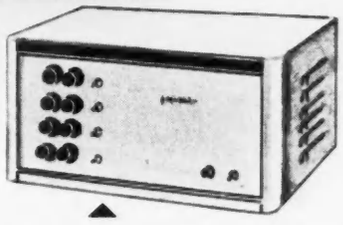
PAGEMASTER SIGNAL UNIT • Completely self-contained, without external wires or attachments, it fits conveniently in coat or shirt pocket.

PAGEMASTER USER • Can be instantly contacted over areas up to several square miles. No matter where he is or what he's doing, he's never out of touch with his office.



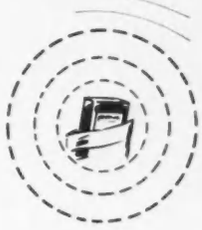
PAGEMASTER TRANSMITTER • Can be conveniently installed alongside switchboard. Coded signals are set by two or three simple dials. Operator can be trained to use the Pagemaster transmitter in 5 minutes' time. A variety of systems offers capacity for signalling up to 3200 units.

HOW PAGEMASTER WORKS

1 Calling party asks operator to page Mr. Smith.

2 PBX operator can put Mr. Smith's code signal on the air in less than 5 seconds.

3 Mr. Smith's receiver responds with pleasant tone, telling him he is being paged.



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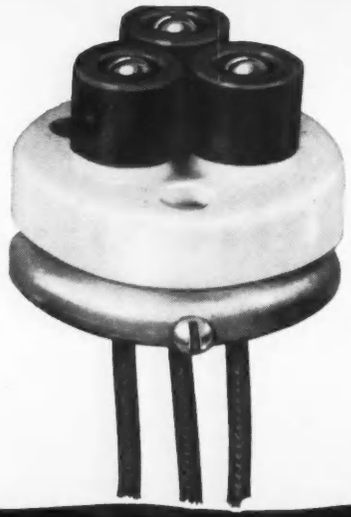

The HV Protector you knew is now the No. HVP Protector —it's better than ever, Boss!

This Reliable protector is a high voltage, high current unit, factory wired, for use on communication lines joint with power conductors and at power crossing conflicts. The unit may also be used as a high current lightning arrester for two wires. Two sizes are in production — the 30HVP with an air gap breakover of approximately 3,000 volts AC, RMS, and a Type 20HVP with a breakover of approximately 2,000 volts. The unit consists of three heavy duty, cylindrical carbon electrodes mounted on a steatite ceramic base. This base is attached to an aluminum bracket and covered with a weathertight, bug proof drawn aluminum shell.

One 6 ft. and two 2 ft. No. 10 insulated copper conductors enter the base through neoprene grommets. Wires are permanently connected to the carbon electrodes by solderless method. Cover is secured to the bracket base with a screw clamp — and can be removed for inspection. The 30HVP and 20HVP protectors are for use on one pair of open wires. Yes, sir, Boss, the "HVP" looks like a dandy . . . I think you should ask for a sample for inspection.

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Reliable

Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

OVER 45 YEARS' SERVICE TO THE UTILITIES

Public Talks are good business

- Selecting The Topic
- Telling The Story
- The Film Program
- Equipment Demonstrations

By BILL BROOKS*

THE TELEPHONE industry's conservatism is a precious commodity, as most telephone people will agree. This atmosphere of quiet good work minus any slapdash element of reckless speculation helps assure the customers that they are indeed being served by an efficient industry with a conscience and a tested set of rules. The result is, of course, good communications at the lowest possible cost to the subscriber.

In creating and spreading this atmosphere of trust, efficiency, and dignity, however, telephone companies often overlook many opportunities to entertain and inform the public concerning the magic of telephony.

Naturally the company official cannot set up a tent, borrow a megaphone and imitate the side-show barker, but he can—and, we feel, should—establish closer contact with his present and potential subscribers than merely the physical contacts of telephone cable and monthly bill.

This extra physical contact is nothing more nor less than personal appearances—showing one's face to the various segments of the public as often, as pleasantly and as informatively as possible. A vital part of our public relations program is making sure our employes, particularly at the supervisory level, realize the importance of mingling with the public to the extent of occasionally getting up before a group and talking.

This sounds like an easy project but the average person has about as much real desire to get up before a group and talk as he has for climbing into a barrel of pit vipers.

"What, ME give a half-hour talk before the Lions Club? Don't be silly, I wouldn't get twenty words out. I've never done any public speaking in my life!"

This discouraging reaction is poor public relations because it deprives the public of an important contact with the telephone company.

"The Spoken Word"

THE FEELING behind the above quotation is the reason for the overwhelming popularity of such books as "How to Win Friends and Influence People," and "The Power of Positive Thinking." People THINK they cannot make a respectable public talk, therefore they cannot and do not.

It is surprising that there are many supervisors—and even some executives as well—in the telephone industry, where the audibility and clarity of the spoken word is the important thing, who find it so difficult to deliver even a briefly informative talk or conduct a program before more than a dozen persons.

There are countless books and manuals on how to make a public address, but the important steps seem to be simply: (1) select an interesting topic, (2) talk "loud and clear" with as much listener eye contact as possible, and (3) don't ramble on when the listeners get restless.

Telephone companies who have had little experience in the public appearance phase of public relations may ask "What groups in our town will be interested in talks and demonstrations?" The answer is—all groups.

There is no one in this communications-conscious age who is not dependent to some extent on the telephone. Service, fraternal, and civic clubs

*Mr. Brooks is public relations director, General Telephone Co. of Indiana, Lafayette.

are particularly fine prospects for many reasons. First of all, the persons who are members of these organizations are people who are interested in the welfare and growth of their community. Telephone service is, as anyone in our industry well knows, an integral part of community growth.

Imparting the "Telephone Story" to these groups is always well-received because (1) the public understands little of the complexities of telephony, and (2) the public is always interested in knowing what the utilities are doing to improve service and keep costs as low as possible.

Naturally the more influential citizens in the community will be the most avid listeners. The community's "opinion leaders"—mayor, councilmen, aldermen, bankers, industrialists, merchants, etc.—know that their future depends directly on the future state of mind of the citizens. The more these opinion leaders know about telephone problems, the better they can interpret them in an atmosphere favorable to the company.

Each of the service clubs usually meets on a weekly or semi-monthly basis. Each club has a program of some sort which the program chairman must arrange or have someone arrange for him. This is where the telephone company can step in with the helpful suggestion that perhaps the club would like to hear about new developments in telephone service, the history of the telephone, proper telephone usage and manners, or perhaps some of the human interest highlights behind the scenes in telephony.

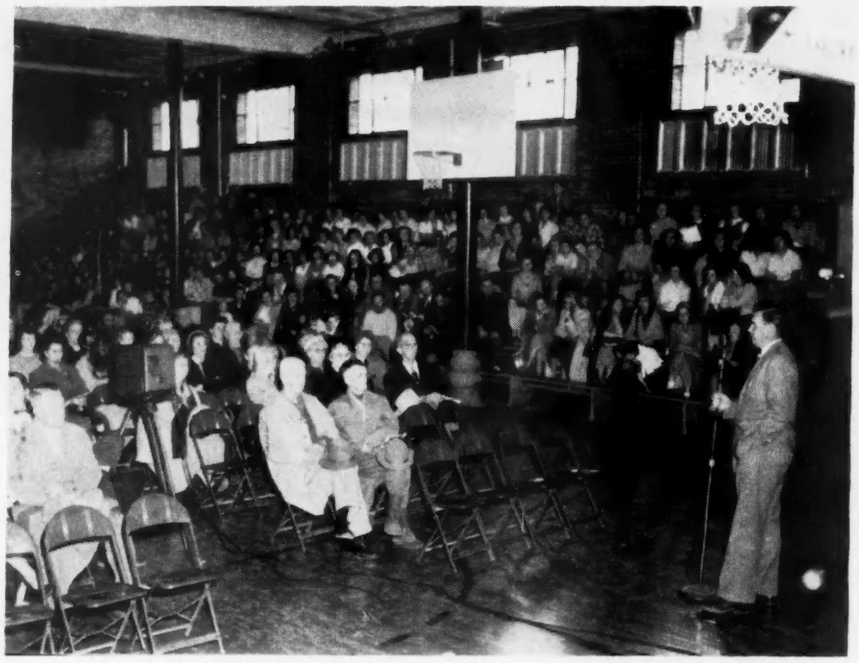
There is generally someone from the telephone company in each of the local service clubs such as Rotary, Lions, Kiwanis, Optimists, Exchange, Boosters, etc. The suggestion that the membership might enjoy a talk on telephony should come from the employer who is a member of that particular club and his best approach, of course, would be through the program chairman. In all likelihood, the program chairmen will be glad to hear the suggestion and, if such a step is required, to submit it to other club officers for final discussion and approval.

Selecting The Topic

LET'S GO into a little more detail on the subjects which could be treated in talks before local service, fraternal, and civic groups. In addition to improvements in local telephone service (recent and planned), telephone history, telephone usage, and human interest sidelights in telephony, there is the fascinating story of the Independent telephone industry. Most people are not at all familiar with the contributions which Independents have made to the forward march of the telephone. Whether the main topic of the talk is Independent telephony or some other subject, there should be at least some introductory remarks devoted to Independents—their history, territory served, and achievements through the years.

Source material on Independent telephony is obtainable from the United States Independent Telephone Association, Munsey Building, Washington 4, D. C. An excellent USITA booklet is entitled "An American Story" and has recently been revised and brought up to date in facts and figures. (A thorough history of the invention of the telephone by Alexander Graham Bell appeared in *Telephone Engineer and Management*, March, 1951; and the *Encyclopedia Britannica* contains a detailed history of the telephone's beginnings.)

The listening group will probably be most attentive to remarks on planned improvements in local telephone service. Hence, it is wise to be completely forearmed with as many up-to-date facts and figures on your present plans as you can muster. It is helpful to have your local commercial manager or plant supervisor with you if you are from a distant community because, as many a speaker has learned, the aftermath of any interesting talk is a barrage of questions. These questions should, of course, be welcomed and answered as truthfully and in as much detail as the questioner desires. If, to reassure the public, we preach, "There are no secrets in the telephone industry," then we must practice what we preach. A question half-answered is not answered at all.



Public meetings can combine a talk, a film, and an equipment demonstration if each segment of the program is not too long. Here some General commercial people set up dial demonstration equipment to show townspeople what the different signals will sound like when their new dial instruments are switched into operation the next day.

"Using The Telephone"

IT MAY sound foolish to suggest to a program chairman that a telephone company representative talk at length on how to use the telephone but this subject really can be a profitable one, both for the public and for the company. Explaining the correct and courteous use of the telephone will help the public get better telephone service and will help reduce certain abuses which plague all companies. Foremost of these abuses are:

(1) Hogging party lines—reference to cases where homes burn and persons die because party on line refuses to yield in emergency.

There are many popular telephone equipment displays. this one, showing the hundreds of parts in an average handset, impresses people with the complexity of telephony. Emphasis can be placed on the marvelous help that the telephone is to everyone and the ease of use despite this apparent complexity. "All this intricate equipment is at your service 24 hours a day for only a few pennies a day," explains the commercial representative.

(2) Correct use of telephone — dial instruments, for example, in communities recently converted to dial operation.

(3) Long distance—call by number whenever possible to effect speedier, more convenient, less expensive service. Explain peak business periods for toll calls, lower rates after certain times and on weekends.

Dial Conversions

POINT No. 2 brings to mind the practice which our company uses in connection with conversion of an exchange to dial. Having cut over several communities to dial this year and many others in the last few years, we have found that there cannot be too much emphasis on the correct use of the dial instrument in areas where subscribers have always had manual service.

If at all possible, we try to schedule a public meeting the night befor the exchange is switched to dial operation. This means that our instructions on the use of the new telephones will remain fresh in the minds of the users when they begin using the new instruments the next day. A newspaper release giving the time and place of the public meeting is handed the local paper and a letter with the same information is mailed to each subscriber in the community.

The meeting is usually staged in the high school gym or auditorium, although we have conducted them in town halls and church basements. In farming communities the time of the meeting should be later than in urban communities, particularly in spring, summer and fall months when field work keeps many farm folks busy until 7:30 or 8 p. m.

Our meeting consists of brief introductory remarks by the district commercial manager who introduces the division manager and any other company personnel present. The commercial manager explains the role of Independent telephone companies in the U. S., then a film is shown on the correct use of the dial telephone. Following the film, the commercial manager dwells at length on the principal points covered in the film, then explains any changes in local telephone service (free service, etc.) after the conversion of the next day. He explains how the listeners are to make toll calls, how to call repair service, information and the local fire and police departments. He emphasizes that all these instructions are in the new directory (or temporary directory, as the case may be). He then opens the meeting to questions.

The Film Program

FOR THE purpose of this and other types of public meetings, we have our own motion picture projectors—one for small groups of approximately 20 or less and a larger projector for groups in auditoriums, gymnasiums etc. If your company is at all interested in showing films (borrowed, bought, or rented), the purchase of a modern 16-millimeter projector is a worthwhile investment. The newer types have the speaker unit built into the projector carring case so that it is not necessary to carry two separate units (projector and speaker) as is the case with older projection units.

It is advisable, if a film program is to play any significant part in your public relations program, to have two screens—one for the smaller groups which meet in an ordinary conference-type room and a larger one for institutional use. If only one screen is purchased, it should be a large one.

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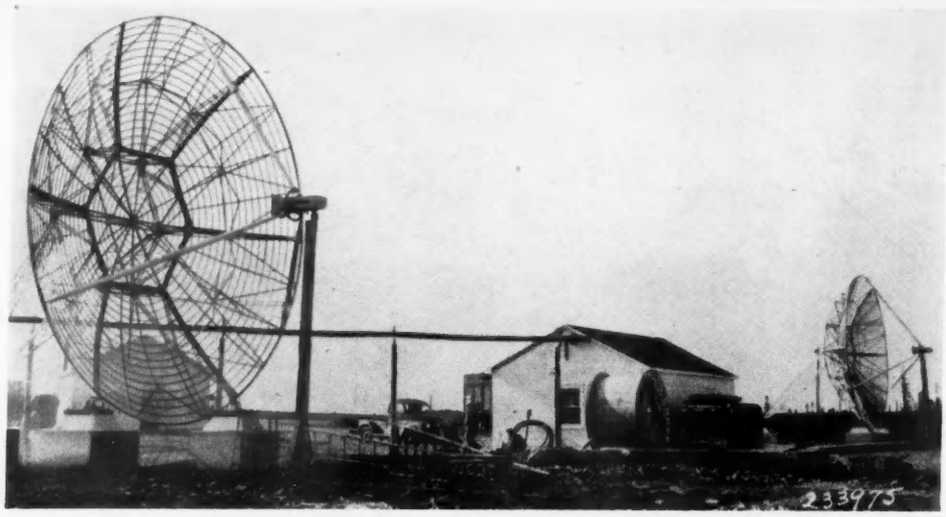

"Over-the-Horizon" Radio Tests

By H. N. MISENHEIMER

Until recently, reliable radio transmission in the ultra-high frequency range and higher was generally assumed possible only on line-of-sight paths. The few instances of good reception at distances beyond the horizon were considered to be "freaks." As transmitting powers were increased and larger antennas came into use, such hitherto unreliable reception occurred more frequently and interest was aroused in the possibility of reliable over-the-horizon transmission. Scientists at the Laboratories have investigated the field for some years and have proven that reliable transmission is possible. To provide information on longterm performance, continuous tests of over-the-horizon transmission were made in Newfoundland for a full year.

RADIO transmission at the frequencies employed for FM and television broadcasting was, until recently, considered reliable only where a line-of-sight path existed between transmitter and receiver. This restriction was thought to apply even more strongly to the higher frequencies (UHF and SHF) used in radio-relay systems. It is true that strong signals are occasionally received at these frequencies over paths extending well beyond the horizon. However, with the testing techniques employed earlier, these transmissions were not found to be suitable for providing dependable communications.

During the past few years, higher transmitting powers and larger antennas have become available and the increased reliability that has resulted from their use on over-the-horizon paths has aroused considerable interest. Long-term measurements of UHF and SHF over-the-horizon transmissions have shown that for distances of 100 to 300 miles, the median (middle value)) received signal levels are only 50 to 90 db below the intensity expected at such distances in free space (Bell Laboratories Records, *June*, 1952, *page* 215) : this is hundreds of decibels higher than the spherical-earth diffraction theory would predict.

In the autumn of 1952, a need arose for a radio-relay communication system in an area where the terrain presented serious operating difficulties. It was realized that if the requirements for this communication system could be met through the use of over-the-horizon methods there would be very substantial cost advantages over a line-of-sight relay system, and that more reliable communications might result. A comprehensive test program was undertaken to confirm the reliability of over-the-horizon transmission. The purpose was broader than simply answering the immediate question — it was to determine a basis for engineering radio-relay systems involving over-the-horizon links, with particular reference to systems that are installed in the northern latitudes.

Newfoundland Selected As Test Area

NEWFOUNDLAND was chosen as the test area, and testing equipment was installed at St. Anthony, Gander, and Harbour Main, *Figure* 1. The two receiving antennas used at Gander are shown in the headpiece. Tests were conducted from October, 1953, to October, 1954, providing wide variations in both weather and

transmission conditions. This extensive program was carried out by the Laboratories and the Bell Telephone Company of Canada, in collaboration with the U. S. Air Force.

At the time the tests were begun, available information on over-the-horizon propagation consisted of little more than a few dozen short-term measurements collected from various sources. These measurements indicated that at distances of 100 and 200 miles the median path losses were greater by about 55 and 73 db, respectively, than the losses expected in free space. This provided a rough basis for estimating median values of path loss as it varies with path length. However, there was no adequate basis for estimating the variation in path loss with frequency or with the reason of the year. Also, very little was known about how propagation would be affected by periods of fog, rain, or snow.

The two test paths in Newfoundland were about 170 and 290 miles long. Frequencies of 505 and 4,090 mc were used. Unmodulated carriers were transmitted and continuous graphical records were made of the received signals. Good results were obtained at both frequencies over the 170-mile path, and at the 505-mc frequency over both paths. At 4,090 mc, the transmitter power and antenna gains were insufficient to provide a continuously useful received signal over the 290-mile path. On both test paths, the long-term median signal levels at 505 mc were very close to the values that had been expected. The ranges of signal variation, with regard to both long-term and rapid fading, were also in good agreement with expected values.

The principal information obtained from the tests had to do with long-term variation in the received signal level, *Figure* 2. The monthly medians of the hourly

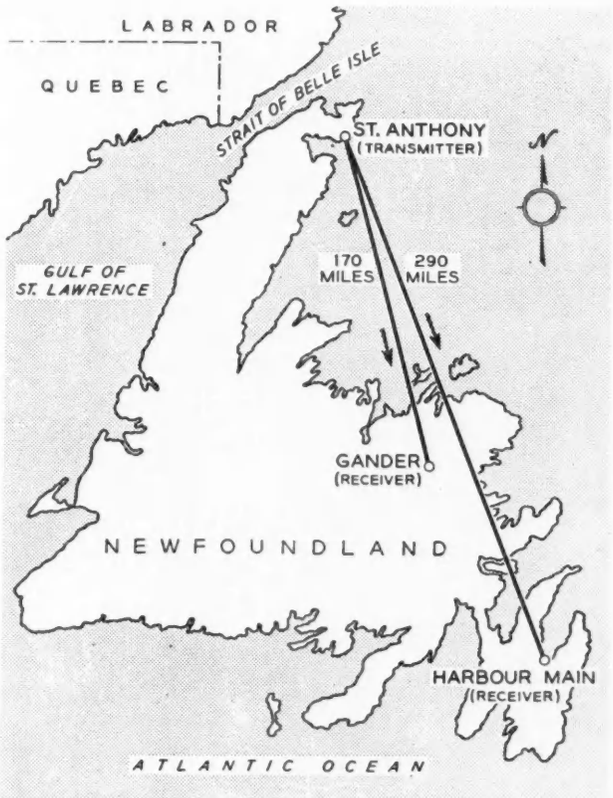

FIG. ONE:—Map showing paths of over-the-horizon tests that were conducted in Newfoundland.

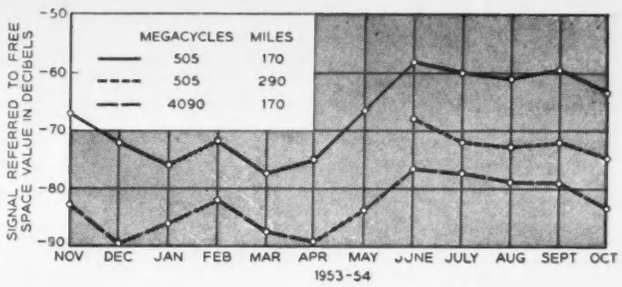

FIG. TWO:—Comparison of the received signal levels.

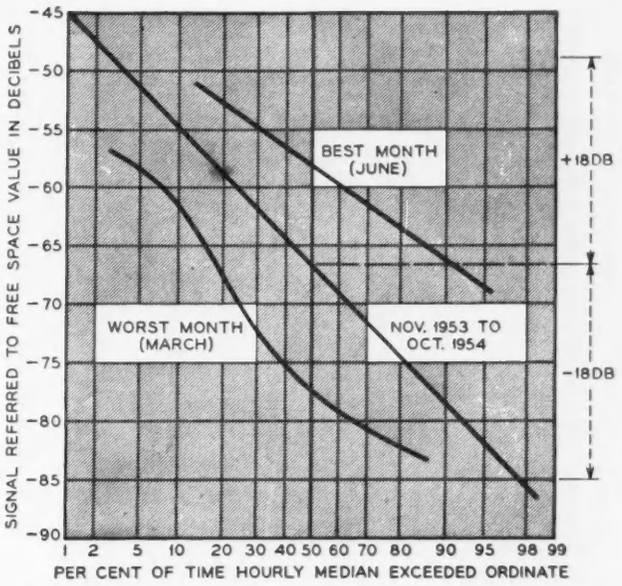

FIG. THREE:—Comparison of 505-mc transmission carried on in Newfoundland during the best and worst months with that for the entire year.

medians are plotted in terms of received signal referred to the signal that would be received if the paths were located in free space. The 505-mc observations over the longer path did not begin until June, but it appears very likely that the full year performance would have paralleled that observed for the 170-mile path.

A second and closely-related group of information obtained from the test is illustrated by the curves of *Figure* 3. These curves are cumulative distributions of the hourly median signals received at 505 mc over the 170-mile path. They show the percentages of the time that the hourly median signal was greater than particular values. In such a distribution, the value that is exceeded exactly 50 per cent of the time is the median value. Similar information was obtained for 505-mc transmission over the 290-mile path and for 4,090-mc transmission over the 170-mile path.

Comparison of the 505-mc results with the earlier data shows that the results of the Newfoundland tests conform to expectations in the following respects: (1) for transmission over the 170-mile path, the average level of received signal was 65 to 70 db below that for free space; (2) transmission over the 170-mile path; and (3) the range of hourly median values for the full year was such that 95 per cent of them were within about plus or minus 18 db and were equally distributed about the median value.

Figure 2 also supplies new information concerning the long-term variation of average signal levels with

the season with the frequency. In particular, it shows the 505-mc signal to be about 15 db stronger in the summer and fall, when temperature and humidity are high, than in the winter and spring (the minor rise in February accompanied minor increases in temperature and humidity). It also shows that the 4,090-mc signal varied in the same general manner, although the signal was 10 to 18 db weaker and did not vary as much between seasons. Part of this reduction in the 4,090-mc median signal level is due to reduced antenna affectiveness on over-the-horizon paths in comparison with that realized from the same antennas on line-of-sight paths.

Figure 3 shows the amplitude distribution of the comparatively slow variations in the received signal. The *Nov.* 1953 to *Oct.* 1954 curve exhibits a normal distribution, in which losses more than x db greater than the median value and losses more than x db less than the median value are equally likely.

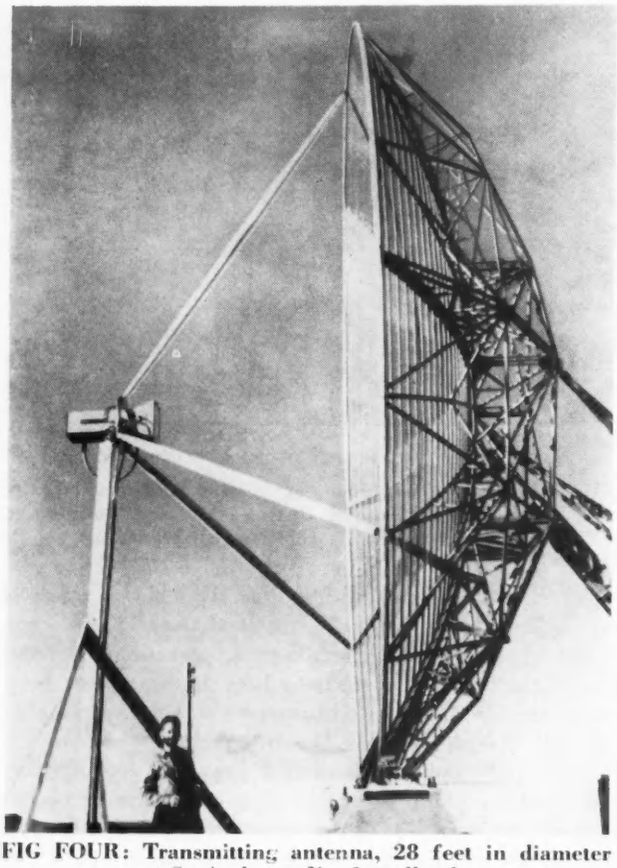

FIG FOUR: Transmitting antenna, 28 feet in diameter at St. Anthony, Newfoundland.

It is characteristic of over-the-horizon propagation that practically continuous rapid fading is superimposed on the slow variations. Over short intervals of time, the distribution of instantaneous signal amplitudes in this rapid fading is not symmetrical but approximates a "Rayleigh" distribution; this means that signal levels differing from the median by more than a given amount are downward fades more often than upward swings. It was found in the tests that the depth of magnitude of rapid fading showed no significant variation with the time of day and very little with the season of the year.

Typical data on rapid fading were obtained from high-speed graphic records of the 505-mc signal received over the 170-mile path. *Figure* 5. The curves give the

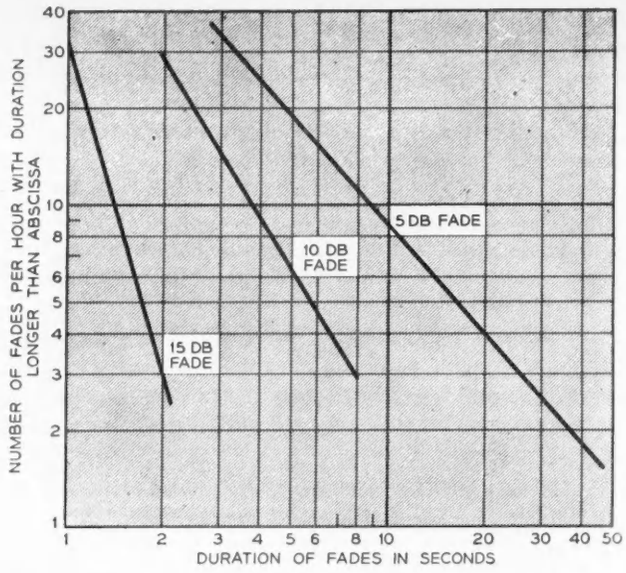

FIG. FIVE:—Characteristics of the rapid fading observed in the 505-mc tests.

number of fades per hour that were more than 5, 10, and 15 db below the hourly median level and lasted longer than the time intervals shown on the abscissa scale. They indicate, for example, that in a typical hour about 32 fades exceeded 15 db in depth and lasted longer than one second. Of these, only three lasted longer than two seconds. At 4,090 mc, fast fading was about 8 times faster than it was at 505 mc.

The numerical data on long-term medians, slow variations, and fast fading are needed so that adequate transmission margins can be engineered into a communications system. When the seasonal variation of monthly

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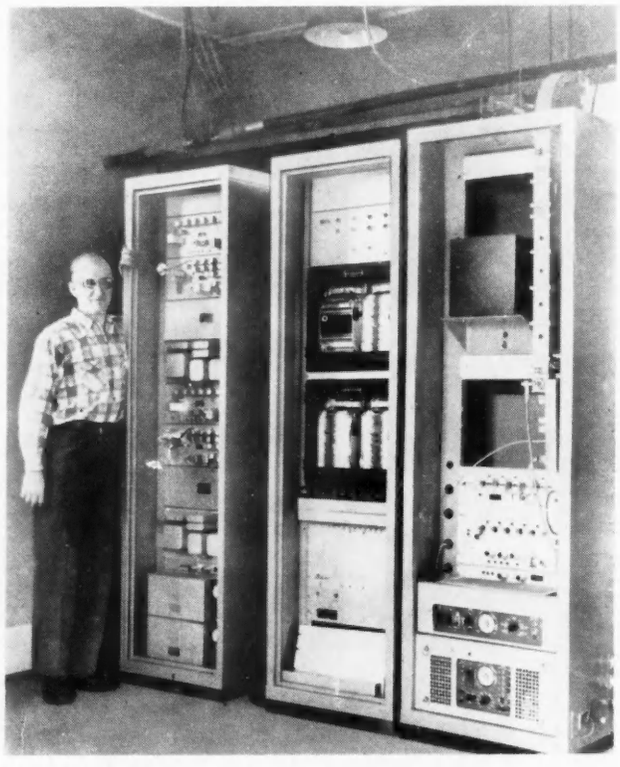
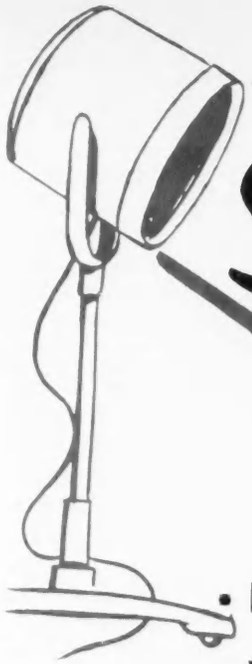


FIG. SIX:—Some of the receiving and recording equipment used in the year-long over-the-horizon tests.



Spotlight on plant practices

- Plant Growth Continues
- Projecting Operating Costs
- Value of Inspection Tours
- Dust is Dangerous

By T. DEWITT TALMAGE*

MOST year-end business reports indicate that the country and its public utility industries are still on the march. Expanding population, steady pace of constructing homes, and thriving business have all contributed to bring plant replacement, re-arrangement, expansion, and modernization, including mechanization, problems to every type of utility. Because community demands for utility services have not been uniform, the starting time and the cadence of this march of progress have not been identical for all companies. This difference in timing is one explanation why comparisons of yearly operating results between companies vary over the range that they do.

It appears, furthermore, that the smaller utilities are having more difficulty solving their problems than the larger utilities. However, evidence is accumulating which indicates that, where faced with a steady demand for their services, even the smallest utility companies are far from inactive.

Companies realizing that the lag between demands for modern service and their fulfillment can, with profit, be shortened have the advantage of being guided by industry-wide patterns which, if studied, should assist in getting unfinished work better planned as well as economically completed in a creditable manner. Ways of becoming acquainted with these trends will be suggested and some associated side lights of current interest will be described in this article.

An appreciation of the scope of telephone expansion and modernization problems may be secured by reviewing the results that have been reported by one state: California. This record is an example of the vitality of the American way of meeting challenging problems head-on in a realistic *fashion and doing* something about them.

While the population of California has increased almost 81 percent since 1940, the number of telephones within the state increased 177 percent. As of December 31, 1954, the 4,940,000 telephones in service compared with 4,610,000 a year earlier and 1,765,000 at the end of 1940.

In the last decade the proportion of telephones served by Independent telephone companies in California has increased from 11.5 percent of the total to over 16 percent. In the last four years telephones served by Independent companies have increased by 52 percent compared with an increase of 28 percent for The Pacific Telephone & Telegraph Co. These significant numbers and percentages are meaningful because when added to the record of progress in other states they reflect the results of public pressures for more and better communication services that have kept the telephone industry busy since World War II.

According to studies made by the Public Utilities Commission of the State of California, approximately 94 percent of the main telephones in that state are served from dial central offices. Between July 1, 1954 and June 30, 1955, more than three times as many subscribers' stations were converted to dial operation than during the previous fiscal year. At the end of 1950 the ratio of dial stations to total stations served by The Pacific Telephone & Telegraph Co., was 88 percent compared to 92 percent for the Independent companies. By the end of 1954 The Pacific Telephone & Telegraph Company's ratio had increased to 93.5 percent compared to 94.4 percent for the Independents.

The momentum generated by this healthy rate of growth makes California a strong contender in the race to be the first state in the Union to serve the public completely from dial telephone central offices.

Cost Trends

THE CONVERSION of telephone service from manual to dial operation tends to stabilize operating

*Educational Manager, Kellogg Switchboard and Supply Company, Chicago 38, Illinois.

costs over a long period because in a large degree such a change results in substituting fixed carrying charges on investment in equipment in the place of operators' wages which have been steadily increasing.

Since October, 1938, within a period of eighteen years, the minimum wage of workers employed by companies engaged in or producing goods for interstate commerce has been increased by law from 25 cents to $1.00 per hour. (There are some exemptions from these requirements). While it does not require a picture to visualize this impact on some businesses, still a simple graph of this trend may spotlight its broader implications.

The reader can easily prepare a thought-provoking chart merely by establishing on a piece of cross section paper, a vertical scale marked off in minimum wage rate units of cents per hour, and a horizontal scale designated in time units in years, over the period of 1938 to, say, 1975. If paper is used having 4 by 4 lines ruled to the inch, ¼ inch could equal 5 cents on the vertical scale and ¼ inch could equal 1 year on the horizontal scale. Within these references may be plotted the following listed points representing the dates that past minimum hourly wage rates went into effect:

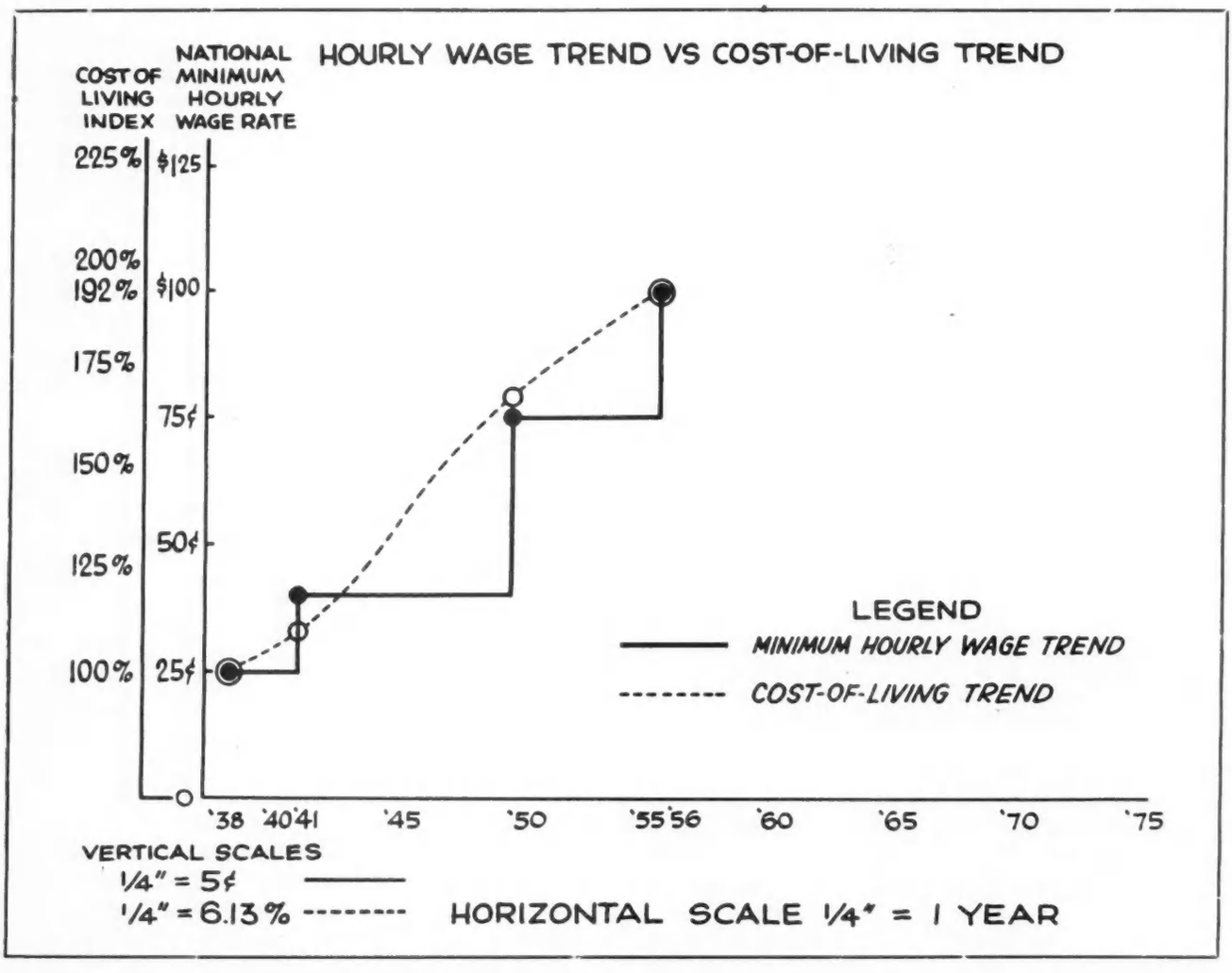
1. October, 1938 ..... $0.25
2. October, 1941 ..... $0.40
3. January, 1950 ..... $0.75
4. March, 1956 ..... $1.00

If the practically straight line formed by connecting together these four epochmaking points is projected into the years ahead, you will have before you, if the past is any indication of the future, the trend of what might be expected, barring an atomic upheaval or other unexpected developments of magnitude.

Some readers may wish to explore this important problem further by doing two things to the chart: (1) change the slope curve just described to a staircasecurve[1] in which horizontal and vertical lines are drawn between the four points and, (2) over this curve, superimpose with a colored pencil a slope curve of prices paid by consumers' for goods and services customarily purchased to maintain their level of living (formerly called "cost-of-living" index) from such typical data as that issued by the Bureau of Labor Statistics of the U. S. Department of Labor.[2]. This index is a statistical measure of *changes in prices;* it tells nothing about changes in the kinds and amounts of goods and services families buy, or the total amount families spend for living, or the differences in living costs in different places. Other indicators are required to measure and study these facts.

Living Cost Trend

BECAUSE there are two sides to every coin, the so-called "cost-of-living curve" is as positive in delineating its significance as the hourly wage curve was in revealing its message — and perhaps prophesy. The starting point or base of 100 percent of this second vital curve may



be taken as the *average* of all prices paid by moderate income families during the period of 1935-39. This beginning point may be located to correspond to the first step (level) of the minimum wage curve in 1938.

A second vertical scale, located slightly to the left of and parallel to the wage-rate scale previously constructed, can now be divided into 92 equal units of one percent each between the level of the first and fourth points of the staircase curve and marked 100 to 192 percent, in that order. If in the first vertical scale ¼ inch equaled 5 cents, then ¼ inch on the second vertical scale will be equal to 6.1 percent.

Now add two intermediate points of 109 and 168 percent, which represent the ratio of change and resulting higher level of the cost of living as of October, 1941 and January, 1950, respectively. The fourth and last point to be inserted is, of course, 192 percent, and corresponds to the cost of living as of the date the last minimum wage increase went into effect: March, 1956. Connecting these four points together establishes the country's average living cost pattern which shows that a 92 percent increase has taken place during the past 18 years.

The relationship between the two curves is interesting. Which one follows or leads the other is as debatable as the old question, "Which came first, the chicken or the egg?" Projecting these two curves into the future may not settle the question but it will furnish further food for thought which cannot be ignored by any prudent businessman.

Because of these conditions, as well as other price fluctuations and financial pressures, the economics of telephone system operations are not getting any simpler with the passage of time. These vital developments have influenced some telephone companies to provide refresher courses in modern telephone engineering economics for their employes that handle plant construction estimates and comparative cost studies. In at least one instance this training service was provided through the facilities and staff of the state university.

Sober reflection and a look at the future brings the realization that the men and women who will be solving the problems of the telephone industry in 1975 entered the business last year, or are being employed this year, or will be hired within the next year or two. The variety of problems these newcomers encounter will do its part to hold their initial interest in public utility service as a career. Many of these new employes will have sufficient curiosity to want to know, and the drive to find out, why things are done in certain ways. This enthusiasm, even zeal in some cases, can be maintained and perhaps increased in ways without number, not the least of which is by following such a simple policy as providing the proper tools, and instruction in their use, required by present-day standards for each employe to deliver the results that are expected from him.

T. DeWITT TALMAGE'S broad experiences as telephone engineer for the Illinois Telephone Association, as principal communications engineer for the Tennessee Valley Authority, and as education manager of the Kellogg Switchboard & Supply Co., Chicago, Ill., have been the subject of reports at many meetings of telephone people and in the trade and technical press. He is the author of 50 articles on telephone commercial, plant, and engineering practices. This is the 11th time that *Telephone Engineer & Management* has brought to its readers a discussion by Mr. Talmage of current, urgent problems facing our industry.

T. D. TALMAGE

Value Of Inspection Tours

ONE OF THE many devices for obtaining ideas and developing balanced telephone experience and judgment so necessary for successful results, is to visit and inspect neighboring telephone companies' plants and telephone equipment manufacturers' factories. A close working relationship between operating companies and manufacturers has always characterized the Independent telephone industry. The factory inspection trip is an established institution. Most factories conduct well-organized tours, complete with experienced guides that assist in making the trip interesting as well as educational. This method of swapping ideas has been found to be thoroughly practical and the time well justified by many enterprising telephone men, newcomers and old-timers alike, representing companies both small and large.

Inspection tours through recently built or remodeled buildings housing dial telephone central offices can be an enlightening experience. An observing individual will usually see a satisfying number of ingenious arrangements and innovations applicable to his problems that will adequately repay him for the time spent in making the trip.

Naturally, during such inspections, the dial switching system itself and the functional layout of the entire building are examined as a matter of course, but there are important side lights that may be overlooked unless the observer systematically scrutinizes the installation. In this respect, the more inspection trips one makes, the sharper become his powers of observation and discrimination.

This method of learning and profiting from the experience of others should be used at every opportunity. Conversely, when your local community celebrates the inauguration of its dial telephone service, or its annual telephone open house, continue to include your telephone neighbors on your invitation list.

Solving Lighting Problems

A COMMON problem in industry including the manufacturing, installing and maintaining of telephone switching equipment, is properly illuminating difficult seeing tasks which cannot readily be done by general

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[1] "*Graphic Presentation Simplified*"—*A guide to the use of graphic methods in business, (book) by R. R. Luty, Chapter II, entitled: Curved Charts, pp.* 10-31; *published by Funk & Wagnells Company,* 1949.

[2] "*The Consumer Price Index—A Layman's Guide,*" *Bureau of Labor Statistics Bulletin No.* 1140 *for sale by Superintendent of Documents, U. S. Government Printing Office, Washington* 25, *D. C. (Price* 20 *cents).*

"Clear the Way"

Huge "Swamp Buggie" with giant-size wheels and large body has been found to be good for negotiating the steep hills of North Carolina. Loaded with chemical spray and hoses for personnel to spray undergrowth, the machine saves time and expense. Here an employe of the Asplundh Tree Expert Co. applies spray to brush on a mountain side.

Every spring and summer the "battle of the brush" begins as telephone companies seek to control the undergrowth that yearly makes its attack on telephone lines and cables. It's a big job. To keep telephone service good, it must be undertaken. As this season approaches, here's a story about how and why this is done.

"I'M SORRY, SIR, but there'll be a delay of several hours on your call . . . underbrush, wild vines and trees have interrupted our service somewhere between here and New York."

Fantastic? Of course! Thanks to the telephone industry's skill, techniques and rights-of-way clearance programs, such a conversation never materializes. Most folks (outside of Russia) know that it never will too, because they realize that the telephone company keeps such obstacles clear of its lines, cables and equipment.

But possible? Yes! Very definitely! If something were not done to keep rights-of-way free of these handicaps, such conditions as mentioned above would exist and it would be a bad and dangerous thing, to put it mildly. For trees and shrubs are capable of growing to the height of open wire and cable on poles and can cause trouble through contact and falling limbs. When trouble does occur, undergrowth, for example, can block the path of the repair crews.

So the maintenance of rights-of-way or "voice highways" free from such obstructions by nature is an important factor in providing good and dependable telephone service. As a result, time and money has to be spent by telephone companies each year "to clear the way and keep it clear."

Such work has been going on ever since the first line was built beyond city limits. Crews of workmen have at intervals been going over the routes with axes, brush-hooks, and saws, cutting the brush and piling and burning the results of their work.

In recent years experiments have been made with mechanization of this job. Bulldozers and steel-toothed scarifiers have been seen pushing over scrub growth, yanking it out by the roots and shoving it over to the side of the right-of-way. In some cases, this was followed by disc harrowing to chop up and cover the re-

Brush hooks are used in some circumstances to make a path for control crews and equipment so they can get into an area to spray. Before chemical sprays, this was one of the methods used to clear right-of-way.

Powerful spray covers undergrowth to prevent it from getting out of control near and under the toll line. The hose in this case is attached to a reel on a truck. The hose is connected to a large tank of chemicals and unreels as the truck pulls slowly through the brush.

Helicopter, hired to spray inaccessible underbrush in the mountainous areas of North Alabama is shown hovering about 75 feet above the Decatur-Chattanooga toll line before spraying a specially prepared chemical on the thick underbrush. The 'copters are used at times in such areas that are hard for men and trucks to reach.

maining litter. A tank-like device has even been used—a machine that rolls up an down the line and literally beats the brush to pieces by means of a series of slashing flails. In recent years the helicopter has joined the fight by spraying in areas that were hard for crews to reach. But of course each method has its defects. For brush that thrives under conditions along the right-of-way is tough. Some species of growth there will continue to grow if even a small bit of live root is left in the ground.

Although a sure method for handling such persistent types has not been found as yet, the appearance on the market some years ago of chemical weed killers has pointed to a way of controlling most of the types of growth found along Southern Bell lines. For this reason such chemicals have become the main weapon in the fight to "keep the way clear."

In Southern Bell's nine-state area, according to Forester Steve G. Pugh, almost every condition and type of soil, terrain, climate and vegetation known or classified today is encountered. Within this area the company has approximately 110,000 miles of overhead local and long distance lines. Of this mileage approximately 200,000 acreas of brush requiring periodic cutting or spraying.

Of course while the objective of such a program is to provide serviceable and accessible rights-of-way, the company also seeks to add to the beauty of the surrounding countryside. Although a brown strip appears after the first application of a brush-controlling chemical, such a condition is only temporary and the undergrowth, which was choking out grasses and flowers, when once dead will allow room for real beauty along the highways.

For the motoring public, Southern

Portable Mist Spray unit can be carried on the back and is shown here being used in a direct attack on undergrowth that spreads in the spring and summer.

In 1928, The Pennsylvania Power & Light Company installed 163 pressure-creosoted poles on a distribution line in Lancaster County, Pa. Not one of these pressure-creosoted poles has been replaced due to decay or preservative failure. Amer Krieder, Pole Inspector, looks over one of these still-serviceable veterans.

In 1954, a total of 180 pressure-creosoted poles was installed for the new transmission line in an area between Hazelton and Wilkes-Barre, Pa. L. Z. Ludorf, Assistant to Superintendent of Lines and Substations, is shown here with one of the 55-foot poles in this line.

"Not one pole installed in 1928 has been replaced due to preservative failure,"

reports Pennsylvania Utility

The Pennsylvania Power & Light Company serves 674,000 customers in a 10,000 square mile area in Eastern Pennsylvania. On its many transmission and distribution lines it has approximately 250,000 pressure-creosoted yellow pine poles in service.

Mr. D. A. Campbell, Jr., Superintendent of Lines and Substations, has this to say about pressure-creosoting: "We have been specifying the pressure-creosote treatment for our poles since 1938, but we do have a record of a number of pressure-creosoted poles installed in 1928. Our test borings of these poles in 1949 indicated that we would not have to test again for at least another ten years. Our replacements due to decay are hardly worth mentioning. The fine performance of our pressure-creosoted poles in our old lines has certainly influenced us to use pressure-creosoted poles in our new lines. We feel that, on the basis of decay, the life expectancy of a pressure-creosoted pole is at least 40 years. We are also specifying pressure-creosoted crossarms to match the life of pressure-creosoted poles. This cuts our replacement and maintenance costs."

This is just one example of how power companies are benefiting from the long service life of pressure-creosoted poles and crossarms. For more data on pressure-treatment and USS Creosote—the quality preservative—write United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.; or call the nearest United States Steel Chemical Sales Office.

USS CREOSOTE

SALES OFFICES IN PITTSBURGH, NEW YORK, CHICAGO, CLEVELAND, SALT LAKE CITY AND FAIRFIELD, ALA.

UNITED STATES STEEL

Bell's roadside chemical brush control program eliminates many traffic hazards such as brush obscured curves and road intersections. Such a program also eliminates many common roadside health hazards like poison ivy, ragweed and other noxious plants.

For the sportsmen it had been proven by the Wild Life Commission of many states that rights-of-way so treated eventually provide more food and cover for small game and birds than the bushy rights-of-way of the past.

Mr. Pugh states that the Company's first experience with the use of chemicals for brush control was in 1942.

High-pressure spray guns atop a specially-built railway car of the National Aluminate Corporation, Huntington, West Virginia, shoot a powerful force of chemicals onto undergrowth along Southern Bell rights-of-way beside the Illinois Central Railroad tracks near Memphis. The train was pulled by an Illinois Central engine.

Using Telephone, Southern Bell Forester STEVE PUGH tells the engineer to slow the train so that dense underbrush and vines near the Company's toll line can be thoroughly treated with the powerful chemical. The control board on the left enables the operator, "TINY" GRANT, to mix the various chemicals for the best results depending on the type of undergrowth encountered. With Mr. Pugh are KENT SANDIGE, construction supervisor, division, Nashville, Tenn., with O. L. COTTEN, repair supervisor, Memphis.

These first trials were not as successful as had been hoped, and another attempt was not made until 1948. At that time trial applications were again made with improved chemicals. Again the results were not satisfactory, but due to continued improvements of this new method, tests were made in 1949.

Spray hits undergrowth on the top of a bank that threatens telephone lines. Force of the spray can be regulated by turning the round nozzles at the end. Tank cars behind the man contain chemical solutions used on different types of undergrowth.

These tests showed that brush could be economically controlled with chemicals and in 1950 Southern Bell's brush control program was extended considerably according to Mr. Pugh. From 1948 to 1955 the Company's

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WITH EVERY QUALITY FEATURE FOR CONVENIENCE AND LONG SERVICE LIFE

It's true; Stahl TMI-76 Telephone Service Bodies have the extra costs engineered OUT. Here is a body that has all the space you want, a body that is reinforced at EVERY point of strain, precision welded of auto body steel, yet COSTS YOU LESS!

Available with Ladder Racks and Rear Bumpers, in prime finish or painted to your order.

MADE BY STAHL . . . BUILDER OF QUALITY SERVICE BODIES . . . mounted on your chassis at our plant, or crated and shipped to you at new low shipping cost.

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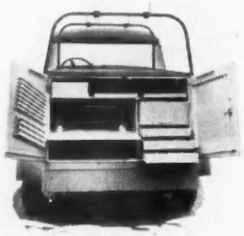
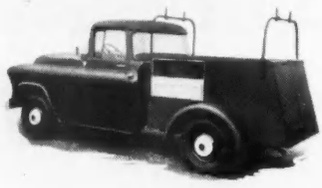
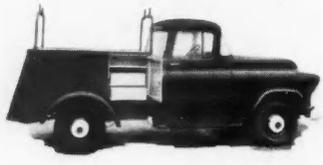






TMI-76 . . . FIRST TOP QUALITY TELEPHONE SERVICE BODY AT A PRICE!

STAHL
METAL PRODUCTS, INC.

"Clear The Way"

(Continued From Page 55)

chemical brush program has treated over 100,000 acres of brush. "From our failures and our successes," said Mr. Pugh, "we have learned a great deal about chemical brush control work."

From such experience has evolved the two-stage method of attack or treatment. The first spraying operation is looked upon simply as an opening-up operation in which the objective is to clear out the easier-to-kill species and possibly kill to the ground line or at least retard the growth of the others. With the area partially cleared, it is then possible for stage two, or the follow-up treatment that is given to the survivors of the first attack.

In the opinion of Stanley A. Haviland of the outside plant section, Operation and Engineering department, A.T.&T., it is not beyond the realm of possibility that within the next few years, brush on our rights-of-way will be reduced to a point where it can be controlled simply as a part of the routine inspection of the lines.—*Reprinted from "Southern Telephone News."*

Batteries

THE NEW LINE of Exide-Manchex batteries which features increased life and higher instantaneous discharge rates is illustrated and described in a new catalog published by Exide Industrial Division, The Electric Storage Battery Co., (Dept. TE&M), Philadelphia, Pa.

A cutaway drawing shows details of construction, including the heat-resistant polystyrene jar, the support ledges molded into the jar walls from which the battery elements are suspended, and the molded one-piece polystyrene dowels. The dowels provide perfect alignment between plates and give greater access of the electrolyte to the positive plate.

Other illustrations show Exide's Plante positive plate, consisting of a cast lead antimony grid into which rosettes or buttons of pure lead are permantly locked, the negative plate which holds the active material securely in place and the microporous rubber separators which, with the plastic dowels, insulate the positive from the negative plates.

By RUTH E. RICHARDS

Training For Dial

In Part IV of her article on "Training For Dial" Miss Richards discusses rate and route work, ringdown tributary, and toll stations. Part III of this article appeared in the June issue of Fortnightly Telephone Engineer.

Lessons 8, 9 and 10
Rate and Route Work

Of all the lessons required to acquaint operators with the correct methods for handling calls on a dial basis, none are more important than thorough training in interpreting routing instructions.

While it is considered desirable, yes even essential, that ready reference positional routing information, underglass bulletins and/or multicard bulletins, provide the operator with approximately 98 per cent of the routing information she needs, there will be the 2 per cent of calls on which routing information must be secured from a Route Operator. In order that a minimum of delay be created for the Outward Operator, the required information must be quickly supplied.

As previously explained, the Route position will be supplied with "Toll Center Routes" for each State, with the correct dial route for the Toll Center to which they are supplied. These route pages should be filed by states in the Operating Rate and Route Guide, immediately preceding the alphabetical listings for the particular state.

Upon receiving a request from an operator for a route to a distant place, the Route Operator will refer first the "First Reference List," which may consist of multi-leaf, rotary or supplementary route sheets, depending upon the records provided in your office; second to the Toll Center Route Sheets and if the called place is not found, further search is extended to the Operating Rate and Route Guide pages.

If reference to the Guide pages is necessary, even though the route alone is requested, we follow the practice of quoting the rate block code at the same time since it may be provided without additional handling of the volumes, and saves time later when rating work is done. Of course, if the operator's request indicates that rate information is needed for quoting a rate or collecting coins, the search must extend to the Guide pages for the Rate Block Code, even though such search was not required for the route.

At the present time, the Operating Rate and Route Guide contains some pages printed in a new style page arrangement, as well as those which have not yet been revised. It is particularly important that the dial routing information for reaching a tributary, which is shown in the new style pages, be clearly understood.

Quotation from "Toll Operating Practice," Div. E. Sec. 1:—"Having located the Exchange-Rate Center in the upper portion of the page, if a dial route is shown in the columns headed 'N P A Route', determine if this route can be used, as follows: See if the Numbering Plan Area (NPA) code, ie, the first three digits of the NPA route, appear in the locally prepared list of NPA codes authorized for use at the originating toll center. If the NPA code shown in the guide appears in the authorized list, quote the NPA route, otherwise disregard that route. If the NPA route cannot be used and the called place is a tributary, note any information listed in the 'TC to Trib Route' column of the guide. Then if the route to the toll center is a dial route ending in +, proceed as follows:

"(a) If the TC to Trib route ends in +, add (1) the number of numerals in the toll center route, (2) the number of numerals in the TC to Trib route, (3) the number of letters to be dialed in the called office name, (4) the number of numerals in the called number. Assume that there are five numerals in the called telephone number unless otherwise indicated by a figure in parenthesis following the + sign in the 'TC to Trib Route' column.

"(b) If the 'TC to Trib' route does *not* end in a +, add (1) the number of numerals in the toll center route and (2) the number of numerals in the 'TC to Trib' route.

"(c) If the total digits thus obtained do not exceed the locally prescribed capacity of the dial equipment, quote the toll center route followed by the 'TC to Trib' route."

It is generally assumed that the capacity of the dial equipment is 11

DID YOU EVER

see 3 nicer PABX installations?

They're by the Middle States Telephone Company of Illinois

The equipment is by LEICH

Park Ridge and Des Plaines are two of Chicago's "growingest" suburbs. The many business firms moving to these towns provide great telephone revenue opportunities for the Middle States Telephone Company which serves these two towns.

Middle States chose the Leich Dial System as the most practical and efficient way to furnish modern PABX service to these new business customers shown here.

WHY LEICH?

The Leich Dial System with its all-relay operation is ideal for PABX installations. It requires very little maintenance, takes a minimum of space, operates quietly and efficiently for long periods without any attention.

With the Leich Dial System your PABX customers can have their choice of every desirable service feature. There's ample capacity for main exchange, foreign, information and tie trunks.

Attractive floor type or keyset attendant's cabinets can be furnished to customers specifications.

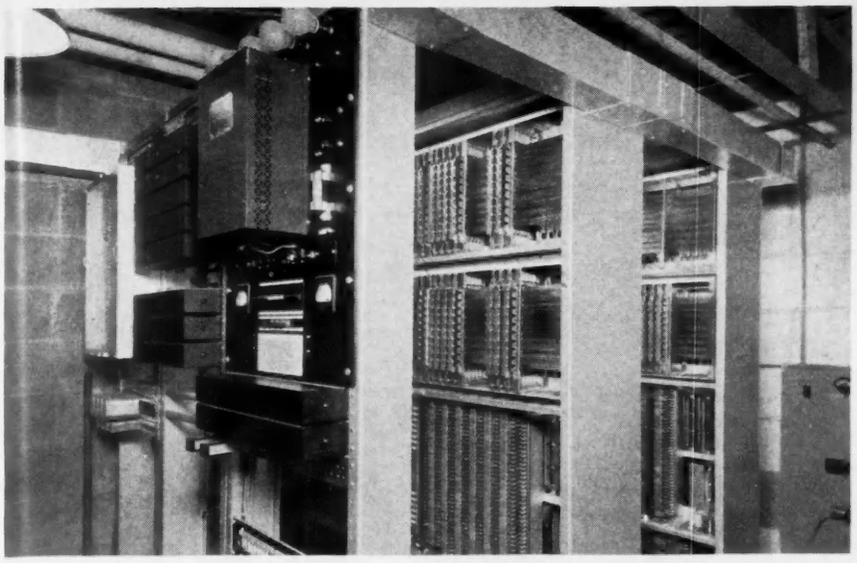
From the telephone company's standpoint, this is a practical investment. For with the Leich Dial System you can quickly and inexpensively add lines or links by jacking them in on the switchboard.

If there are any PABX prospects in your territory, we shall be glad to quote you on a Leich Dial System PABX.

There's no charge or obligation. Let's hear from you.

LEICH

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLINOIS

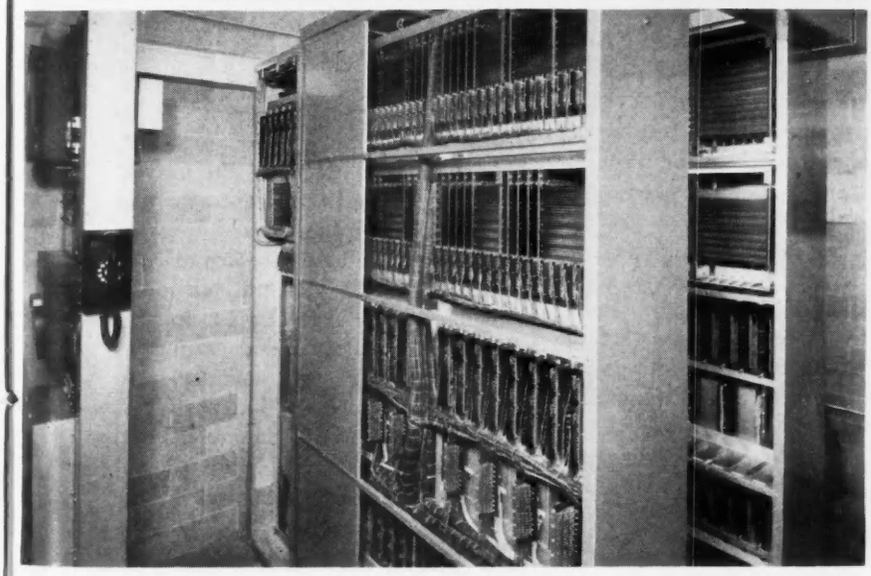


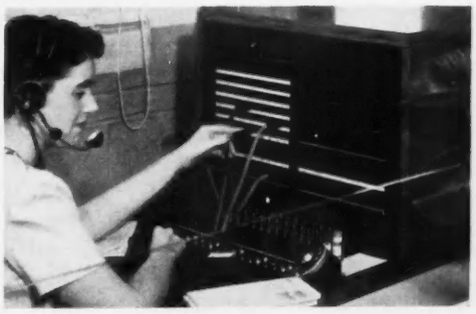
BUTLER BROTHERS

140 lines, 18 trunks, 16 links, single position attendant's switchboard. The Leich Dial System is wired for 200 lines.

GENERAL MILLS

100 lines, 24 trunks, 16 links, two position attendant's switchboard. Wired for 200 lines.





FASTEX DIVISION
ILLINOIS TOOL WORKS

100 lines, 14 trunks, 10 links, single position attendant's switchboard. Wired for 200 lines.

H

LINOIS

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GENERAL SYSTEM

digits, and the following examples are based on that assumption.

Example (1): from R & R Guide: *California*, NPA Route, San Martin 415+2L+ (TC San Jose) TC to Trib Route 2L+

Your individual office route to San Jose is Cgo 062+2L+ (not identical). (a) 062+2L+ is route to be quoted (10 digits).

Example (2): From R & R Guide—California , Yountville vn (TC Napa) 415+949+ TC to Trib code 949+ Your individual Toll Center route for Napa is Cgo 177+. The route codes to the distant toll center when compared are *not* identical. TC code 177+ TC to Trib code (949+) +5 digit number = 11 digits. Use (first route) 177+949+.

Example (3): From R & R Guide—Pennsylvania, rd Hensel (TC Lancaster) no dial route shown. Your individual office route to Lancaster is (T3) 030+392+, and you do not have a dial route to Hensel. You must, therefore, reach an operator at Lancaster who will ring Hensel. Route code (T3) 030+392+121.

Example (4): From R & R Guide—Ohio, Sterling NPA Route, 216+430+93 TC Wooster. Your individual office route to Wooster has an identical NPA Code, ie, 216+2L+ (TC 213+430+). Quote the codes as shown (first route) 216+430+93.

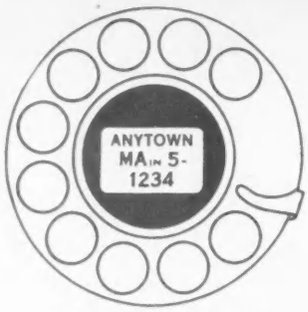
If a dial routing code is not followed by a + (plus) or (Tan) or (Name), this indicates that an operator at either the terminating exchange or the terminating toll center will answer.

If no dial routing can be determined, either from the Guide or a locally provided list of dial routes, determine the ringdown route to the called point, or to the toll center serving the called point.

Operators at Route positions should be taught to quote dial routes to include all of the information shown:

If the routing directions include the symbol √, say fo rexample: (1) "Check 8 and 9," if the symbol is followed by the thousands series in which coin telephones are located (2) "Check the number" if only the symbol √ is shown. (3) If no symbol is shown, say "Not a coin."

Quote routing codes thus: "(code) plus" or (code) plus (code) or (code) plus 2L plus etc. Instead of plus 2L plus, if the dialing directions include the actual letters to be dialed, use these letters, such as +AL+. If a tandem operator will be reached, indicated by the code (TT), say for example, "(Code) tandem." If a place name follows the tandem (TT) add, "Ask for (name of place shown after the code TT). If the routing code is followed by a place name in parenthesis, quote the code and add, "(Name) will answer." If the routing directions show different codes for numbers and for TTC operators, also quote the TC operator code.



EDITOR'S NOTE

Several of Miss Richards articles have been reprinted as a 100-page book titled—"A Guide To Effective Traffic Management Methods." Copies of this attractive, illustrated book are available at $3.00 per copy. Order from Readers' Service Dept., TE&M, 7720 N. Sheridan Rd., Chicago 26, Ill.

Call* 32. *A Request Is Received For the Route To A Point Listed On the First Ref. List—Toll Center, Called Number Dialed.

(a) Answer route and rate signal.

(b) Request received for a route.

(c) Refer to the First Reference list.

(d) Routing directions indicate that desired point is reached over a one switch connection. Called number reached by dialing. Explain that the "+" following the last routing code indicates that the called number is dialed.

(e) Quote routes, including the first route and the dialing codes. For example, on a request for the route to Macon, Ga. the routing operator quotes "check 9 Cgo 404+591+." Explain that if the codes plus 1L plus, or plus 2 L plus or plus 3L plus are included, they indicate to the operator the number of letters to dial in the office prefix and should be quoted as furnished, for example the route to Philadelphia would be quoted as "check 8, 9 Cgo 215+2L+."

(f) Operator acknowledges. Disconnect.

Call* 33. *Toll Center, Called Number Not Dialed.

(a) Answer route and rate signal.

(b) Request received for a route.

(c) Refer to the First Reference list.

(d) Routing directions indicate the called place is reached over a one switch connection. One or two codes furnished.

(e) Quote the routes, including first route and the dialing code or codes. For example, on a call to Southern Pines, N. C. quote Cgo 704+152. Explain the absence of the plus indicates that numbers cannot be dialed at that office. On a call to Jeffersonville, N. Y. Cgo 212+230 (TT). Explain that the code TT means "Toll Tandem," and that the operator who is completing the call should know that she will reach a manual toll tandem operator at the intermediate point. Explain order tone.

Call* 34. *Ringdown Tributary.

(a) Answer route and rate signal.

(b) Request received for a route.

(c) Refer to the First Reference list.

(d) Routing directions include the code "rd."

(e) Quote the route in the usual way adding the routing codes. For example, on a call to Deerfield, Mich., quote "ringdown TC Adrian, (First Route ofc) 313+447; on a call to Lodi, Wis., "ringdown TC Madison, Cgo 074+121." "121" is the universal code for the Inward operator and is used to reach the Inward operator at the Toll Center where a dial code is not provided to dial through to the ringdown tributary. Explain that in the first example the dial equipment at the toll center will connect us to a ringdown trunk in that particular office; in the second example the dial equipment at the toll center will not connect to a ringdown trunk to the tributary.

Call* 35. *Check* (√) *Symbol Shown. (Followed By a Digit, As "√" 9.)

(a) Request for a route, followed by query, "Is (cld pl) (cld no.) a coin telephone?"

Please turn to page 62

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38 million errands to do!

What else but the telephone can do them so quickly, so economically!
Our customers use it 38 million times a day—a figure that has *doubled* in the last ten years!
As the service of Independent telephone companies grows more useful, your own telephone increases in value to you. For America's Independents serve in communities covering two-thirds of the area of the nation—link your telephone with the 25 million people who live and work there.
To reach them . . . to do business . . . to cement friendships . . . you depend on this service. And just as surely, you benefit from its continued growth.

INDEPENDENT

Independent Telephone Companies of America

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Training For Dial

(Continued from page 60)

(b) A dial route, last code followed by "plus" is furnished.

(c) The symbol "√" follows the name of the called place.

(d) Add "Check the number" if only a "√" is shown, or say "Check 9," if the symbol is followed by the thousand series in which coin telephones are located. Explain how route and rate operator will determine phrase to use.

Call 36. A Request is Received For the Route to a Point Listed on the First Reference List—Dial Tributary of a Built-up Circuit Point.

(a) Answer route and rate signal.

(b) Request received for a route.

(c) Refer to the First Reference list.

(d) Routing directions indicate that called place is a tributary of a built-up circuit point. Called number reached by dialing.

(e) Quote the routes, giving the toll center followed by the dialing codes. For example, on a call to Fairfax, Md. quote "TC Wash. D. C. check 9, (First Route ofc.) 202+ 2L+."

Call 37. Dial Office Designated "vn."

(a) Answer route and rate signal.

(b) Request received for a route.

(c) Refer to the First Reference list.

(d) Routing directions include the code "vn."

(e) Quote the routes, in the regular way, adding "vn" followed by the routing codes, for example: Williamstown, Ky. quote "check 9, vn (First Rote ofc.) 513+2L+ (TC 513+940+)," or to Monroe, N. Y. quote "check 7, vn (First Route ofc.) 914+770+."

Call 38. Straightforward Tributary.

(a) Answer route and rate signal.

(b) Request received for a route.

(c) Refer to the First Reference list.

(d) Routing directions include the code "sf."

(e) Quote the routes, giving the toll center, adding "Straightforward" for "sf" followed by the dialing codes. For example, the routes to Hobart, Ind. would be quoted, "TC Gary straightforward (First Route ofc.) 880+926." Explain that the absence of a plus sign indicates that an operator will be reached.

Call 39. An Order is Received for Routes to a Point Not Listed on the First Reference List.

(a) Refer to first reference list. Called place not found.

(b) Refer to Toll Center routes pages associated with the state to determine if a dial route is provided. If not found, refer to the Operating Rate and Route Guide. Check Toll Center routes again to determine whether dial route shown in R & R Guide may be used. Quote dial routes. Several example calls should be used to illustrate the method of determining the dial routes to tributary offices as explained in the narrative portion of this lesson.

Toll Station

The Toll Operating Practice definition for a Toll Station reads, "A telephone, either public or private, connected with a circuit serving only such telephones, or with a ringdown toll circuit or trunk." Within the past two years an increasing number of toll stations have been so designated in the Operating Rate and Route Guide.

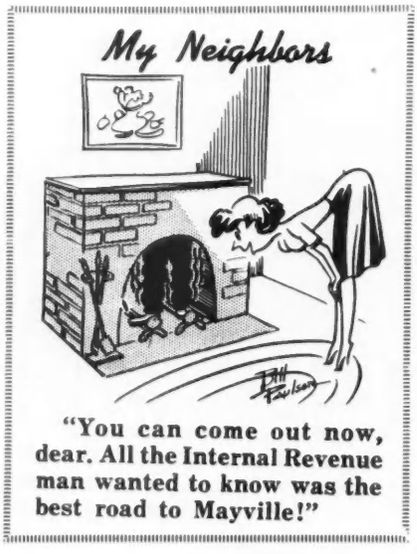
In actual practice, many of the roadside coin stations (outdoor booths), which have become so popular, have been established as Toll Stations and rate centers. In sections outside of an exchange service area, such stations may be installed to provide temporary service to newly created communities or to vacation areas where the need for service is seasonal.

Some such stations may be served by connecting them to a ringdown toll circuit between a toll center and a tributary office. It is to call attention to the manner in which such telephones are listed, and the correct method of quoting a route to them, that this explanation is given.

When a request is received for a route to a point listed with the code "TS," quote the toll center and add "Toll Station." If the entry "Thru (pl) rd" is shown, all "Thru (pl) ringdown" and the corresponding codes. For example, in California, "to Sequoia Lake (thru Reedley rd) TC Fresno, dial code 916+637. In this case Reedley will answer and ring the toll station.

And with this example we close the book on this series of lessons designed to help you meet the challenging and exciting days ahead as you enjoy the satisfaction of your new Toll Dial equipment.

Next month we will discuss some of the phases of dial as it concerns your neighbors in towns and villages served by Community Dial Offices.—*Ruth E. Richards.*

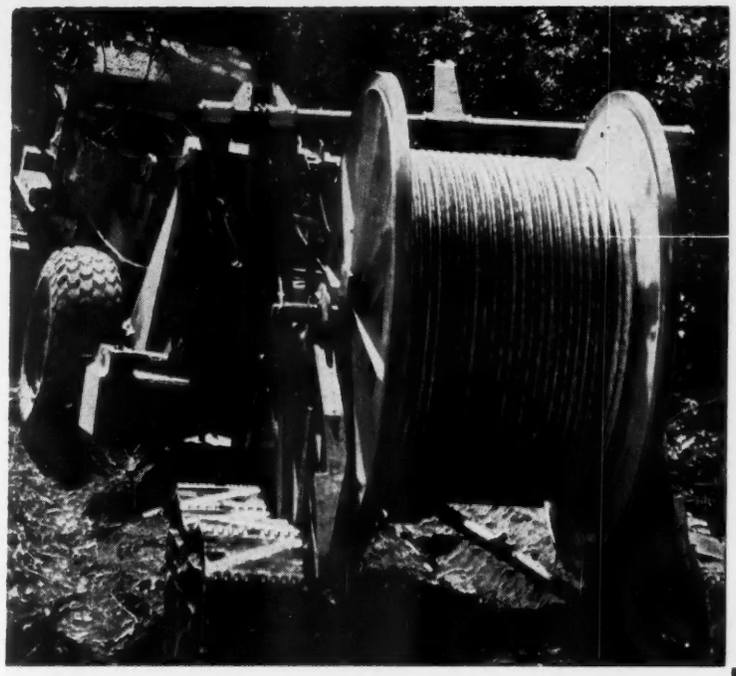


"You can come out now, dear. All the Internal Revenue man wanted to know was the best road to Mayville!"

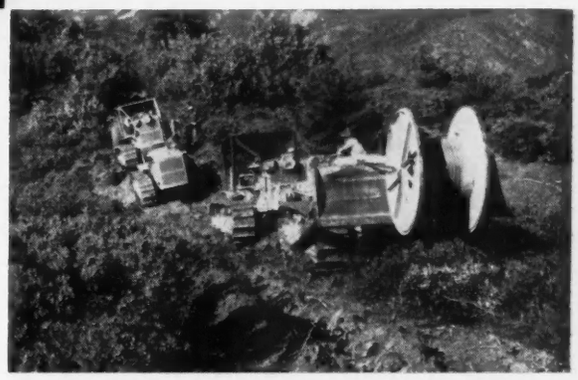
Stromberg-Carlson Names Cook to New Position

APPOINTMENT of David S. Cook as associate director of public relations of Stromberg-Carlson, a division of General Dynamics Corp., has been announced by Stanley H. Manson, director of public relations.

Mr. Cook has been with Stromberg-Carlson since December, 1942, when he joined the company as editor of "The Speaker." Subsequently he served as sales promotion manager from 1946 to 1954, and was appointed advertising manager of the Radio-Television Division in July, 1954, holding the latter position until taking up his new duties on May 1st of this year. Prior to joining Stromberg-Carlson, Mr. Cook was associate manager of the Collins Management Services, a concert and lecture bureau serving the Northeastern United States.



Modern Cable Construction



Section VII of Mr. Reed's article discusses—methods of supporting aerial cable; methods of installation and uses of factory assembled messenger-supported aerial cable.

By JOHN S. REED

Methods of Supporting Aerial Cable

LEAD covered cables and most plastic jacketed cables are not self supporting and must be suspended from galvanized steel or Copperweld messenger strand.

The first aerial cables were supported from a messenger strand by marlin hangers. These hangers later were supplanted by metal rings crimped to the messenger. These in turn were replaced by specially formed rings that could be snapped on the strand by hand. The rings were placed at about 20 inch intervals.

The cable was installed by pulling it through rings placed in advance by a man riding a cable car, or by pulling it into stringing blocks with the rings afterwards placed around the cable and hooked to the strand. This ring supported cable is still employed to some extent, particularly where little trouble is experienced with ring cutting or chafing, or bowing of the cable.

It is now common practice among telephone companies to install aerial cable by spinning the telephone cable to its supporting messenger. The cable is bound to a previously installed and pre-stressed messenger by a spinner which is towed or otherwise moved along the messenger and applies the binding wire. The cable may be lashed as it is payed off a reel along the line or, in obstructed areas, after it is pulled into support blocks from a stationary reel. Several types of spinning machines are available by field lashing the cable to the supporting strand by means of a binder wire. Field spinning has gained wide acceptance and is now used extensively for aerial telephone installation and to some extent for power cables.

Another and recently developed method of field spinning involves lashing the cable to the support strand on the ground. The cable and support strand are simultaneously payed off their respective reels and, with controlled tensions, are pulled through guides and the spinning machine which lashes them together. A weighted leader or torque arm is attached to the leading end to prevent the cable and strand from twisting around each other as the assembly is being drawn through the temporary cable blocks previously placed on the poles.

The power group has made use of factory-assembled messenger-supported aerial cables introduced at about the same time that field spinning was first utilized for aerial cable installations. The most popular power construction consists of three rubber insulated neoprene jacketed conductors, twisted together and bound to a support strand at the factory. These cables, because of their flexibility and mechanical strength, are easily adapted to this type of construction and have come into widespread use. They can be installed with a minimum of special equipment and are advantageous for installation over right of ways, or in wooded or other congested areas. *Turn to page 66*

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STROWGER AUTOMATIC
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That little "bookworm" has the facts, all right. Independents are buying more Strowger Automatic than any other dial switching equipment! Here's why:

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Strowger guarantees economical low maintenance—one of today's greatest needs—and unparalleled long life as well. Strowger is quality-built by the company with the longest experience in manufacturing dial switching equipment.

WE'RE AT YOUR SERVICE!

Call in our friendly engineers today. They'll be glad to come—and *you'll* be glad when you see how much their help can mean to you. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

Factory lashing of paper lead telephone cable to its supporting strand did not immediately come into use because the unprotected lead sheath would be susceptible to damage by chafing on the binder during the normal handling incident to manufacture, shipment and installation. However, because of the advantages which this construction offers under certain installation conditions, a type of cable construction has been developed which overcomes these difficulties and makes factory assembly feasible. In this construction a high molecular weight polyethylene jacket is extruded over the lead-antimony sheath of a paper-insulated lead-covered telephone cable for mechanical protection. This covering also permits a 10 mill reduction in the lead sheath thickness to a value employed on telephone cable during the wartime shortage of lead. As additional experience is gained, it may be feasible to allow further reduction in the lead sheath. The cable is laid parallel and bound to a stranded galvanized steel messenger by means of a 0.020″ x 0.500″ galvanized steel binder strap. The polyethylene jacket, which is applied over the lead antimony sheath, acts as a cushion to protect the cable from damage during processing, shipment, and installation. This type of cable is illustrated in *Figure* 172.

The manufacture of this cable was pioneered by the General Cable Corporation. Three sizes of factory assembled paper lead aerial telephone cable have been made up for use in a trial installation in an independent telephone company area, consisting of 26 pr. cable, 51 pr. cable, and 101 pr. cable, all with #24 AWG conductors.

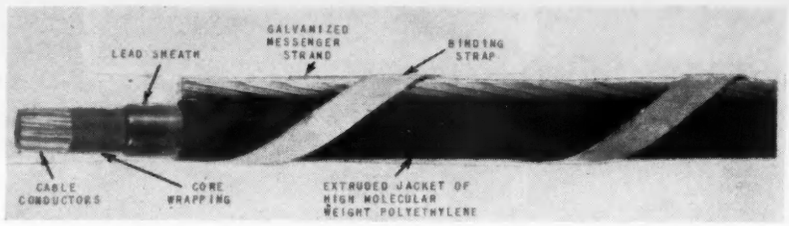

FIG. 172:—Construction of General Cable Corporation's factory-assembled messenger supported aerial cable.

Also available is a standard plastic cable laid parallel and bound to a stranded galvanized steel messenger by means of 0.020″ x 0.500″ galvanized steel binder strap.

Characteristics of Factory-Assembled Messenger-Supported Aerial Cable

THE MESSENGER strand of factory - assembled messenger - supported aerial cable is not ordinarily pre-stressed. Therefore, for satisfactory line design, it is advisable to take into consideration the stress-strain characteristics of the messenger strand and its effect on the sags and tensions through the entire climatic loading cycle of the assembly. When a messenger supported cable is installed and subjected to various climatic loading it elongates and contracts in a manner characteristic of the messenger material.

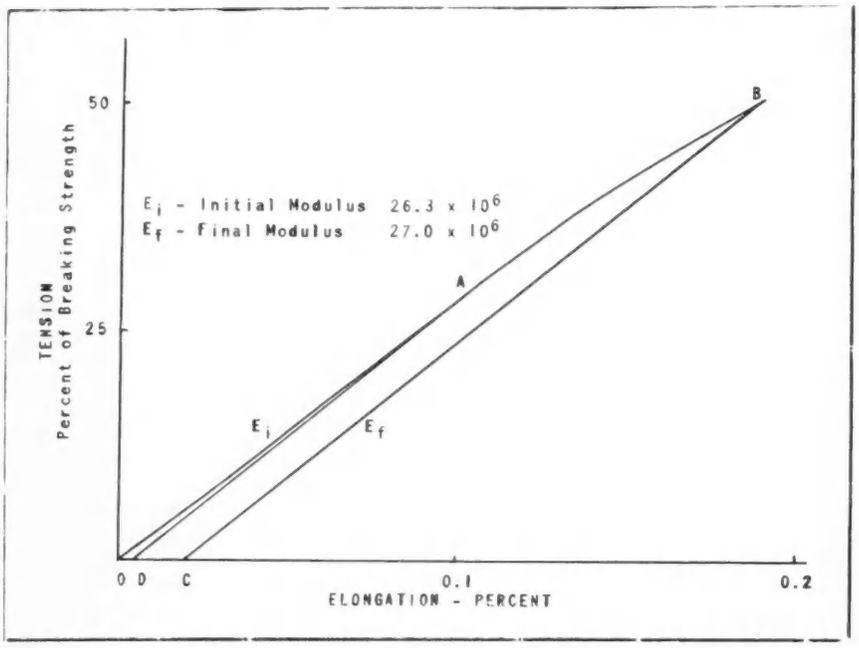

FIG. 173:—A typical tension-elongation curve for galvanized steel messenger.

Shown in *Figure* 173 is a typical tension elongation curve for galvanized steel support strand.

Upon initial application of stress, assuming that the stress is applied slowly or is maintained for a period of time, the elongation would be to a point on line OAB corresponding to the stress applied. If it is stressed to 30 per cent of its ultimate strength it will elongate to point "A." If this stress is released the messenger will contract along line AD and will have a permanent set or elongation of the increment OD. Being thus conditioned, it will be perfectly elastic within the limit of this stress and subsequent stressings within this limit will be along the line DA.

If, however, the support strand is tensioned to some value of stress higher than that previously applied, its elongation will follow the line DAB and at 50 per cent of its ultimate strength will reach point B. When this stress is released the messenger will contract along line BC and will have an additional permanent elongation of DC. It will then elongate and contract elastically along the line CB up to the stress of 50 per cent of its ultimate strength.

Let us consider the way this effects an aerial installation where the support strand has not been previously stressed. If, for example, a cable is installed with the support strand stressed to 30 per cent of its ultimate strength at 60° F, it will have a sag of X inches. If at some future time, it is subjected to ice and wind loading to a value of 50 per cent of the ultimate strength of the support wire there will be a permanent extension of the messenger as shown by DC of *Figure* 173 so that when it is again at 60° F and without climatic loading the sag will be X inches plus an amount corresponding to the permanent extension of the messenger. This elongation which increases the sag also reduces the tension from the original value.

This effect can be anticipated and

Thermoplastic cable—as made by General Cable Corporation—*is* tough! Supertel Cable has a rugged polyethylene "hide" that's sunlight-resistant and fights moisture. It's "ornery" enough to stand up to roadside grease and oil too. But with *all* this—it's still lighter, and easier to handle. This means smaller and less experienced crews can string the cable faster and with lighter equipment — *and* with resultant "mark downs" in cost.

General Cable Corporation has been making telephone cable for over seventy years. They produce a top-quality, long-lasting thermoplastic cable which is available in standard sizes up to 404 pairs in 19, 22, and 24 AWG. Each conductor is insulated with polyethylene.

Getting Supertel Cable is very simple. Just order from your Automatic salesman or telephone the warehouse nearest you. Specify whether for aerial and duct, or for direct burial. Automatic's warehouses — which incidentally, *stock* over 2500 telephone supply items—are located in Kansas City, Chicago, Richmond, Johnson City, N. Y., and Portland, Ore.

CHICAGO	HAymarket 1-4300
JOHNSON CITY, N. Y.	BInghampton 7-8507
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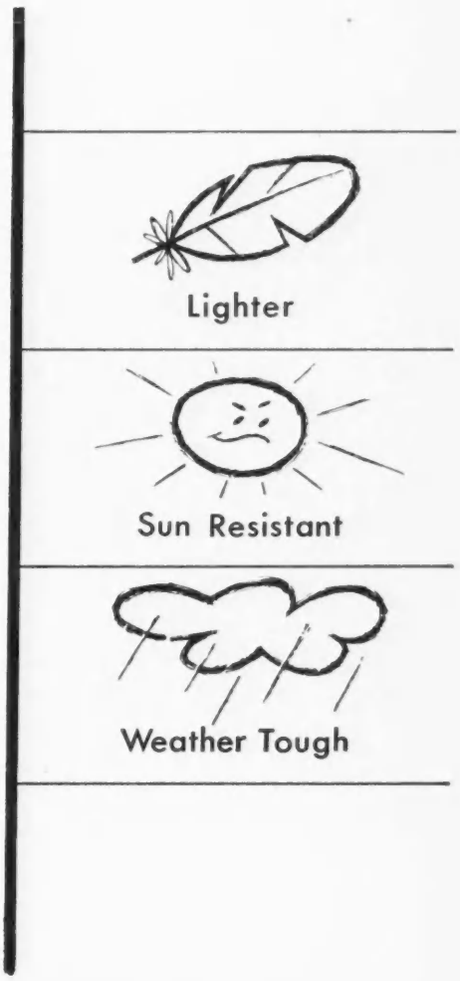
KANSAS CITY	HArrison 1-4720
PORTLAND, ORE.	CApitol 3-7244



AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

TABLE XIII

Physical Characteristics of Factory-Assembled Messenger-Supported Aerial Telephone Cable

No. of Pairs	Allowable Defective Pairs	Conductor Size AWG	Lead Sheath Thick. Inch	HMW Poly. Jacket Thick. Inch.	O. D. Inch	Weight Lbs./1000′	Conductor Resistance Ohms/Mile	Mutual Capacitance MF/Mile	Weight Lbs./1000′ with Cable Messenger & Binder
26	1	24	.054	.047	.51	450	145	.090	710
51	1	24	.057	.047	.62	645	145	.090	910
101	1	24	.061	.047	.81	1000	145	.090	1270

compensated for by installing the cable with higher support strand tensions and smaller sags than would be indicated by stringing charts designed for use with pre-stressed messenger. These sags and tensions will be such that with the occurrence of full climatic loading the messenger will be extended by an increment which will bring the sags and tensions to the desired final values.

Tables XIII and XIV describe the physical characteristics of the factory-assembled messenger-supported aerial cables used in the field trial installation. *Tables XV, XVI, and XVII* show stringing sags for the cables furnished and the corresponding final sag at 60° F with no load and at 0° F with full climatic loading. These sags and tensions were calculated using the well known Martin's Tables of Catenary function, and assuming climatic loading conditions of ½″ ice, 4 lbs/sq. ft. wind plus a constant of .31 (for heavy loading district).*

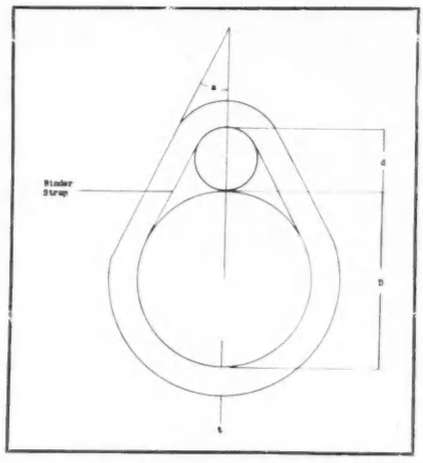


FIG. 174:—Configuration of ice-loaded factory-assembled messenger supported aerial cable

The size of the supporting messenger strand indicated will enable the installation of the cables in 150 foot spans with a sag of approximately 2.5 feet at 60° F to produce a maximum tension not to exceed 50 per cent of the messenger breaking strength at 0° F under heavy loading conditions.

**The ice loading on messenger supported cable is somewhat involved because of the configuration of the assembly. This configuration is indicated in* Figure 174 *and the formula based on the area of the ice envelope is as follows.*

$$A = \frac{\pi t}{2}(D+d+2t) + \frac{D+d+4t}{8}\left[4\sqrt{Dd} + \frac{\pi a}{90}(D-d)\right] - \frac{\pi}{8}(D^2+d^2)$$

$$a = \sin^{-1}\frac{D-d}{D+d}$$

A = Area of ice envelope in square inches
t = Thickness of ice in inches
D = Diameter of telephone cable in inches
d = Diameter of messenger strand in inches
a = Included angle between vertical axis of messenger-cable assembly and a line tangent to surface of the messenger and the cable, degree.

The weight of ice loading in pounds per ft. is based on a density for ice of 57 pounds/ft.^{3} and is calculated from the following formula.

$$W_i = 0.198\left(\pi t(D+d+2t) + \frac{D+d+4t}{4}\left[4\sqrt{Dd} + \frac{\pi a(D-d)}{90}\right] - \frac{\pi}{4}(D^2-d^2)\right)$$

The wind loading is assumed to act upon the major axis of the completed assembly with ice loading and is calculated from the following formula where W_w is in pounds per sq. ft. and f is the force of the wind in lbs./sq. ft.

$$W_w = \frac{f}{12}(D+d+2t)$$

The resultant loaded weight is calculated from the following formula where W_v is the weight of cable assembly plus ice.

$$W_R = \sqrt{W_v^2 + W_w^2} + 0.31$$

Method of Installing Factory-Assembled Messenger - Supported Aerial Cable

THE FACTORY-assembled messenger-supported aerial cable is installed by the following method, developed in the trial installation depicted in *Figures* 175 *to* 187.

A cable block is mounted on each pole at the proper height for the cable messenger (*Figure* 175) and a ¾″ or 1″ pulling line is threaded through the sheaves and, if necessary, through

any large trees along the cable path. These blocks should be large enough to easily pass the cable, and should not be smaller than shown in *Figure* 175.

The pulling-in rope is fastened to the messenger on the cable by means of a swivel connection shown in *Figure* 176. The cable is then pulled in at a rate to maintain a sag between poles without the cable dragging on the ground or abrading excessively against tree limbs. Light braking is applied to the pay-off reel by a cross-arm against the reel flanges to prevent over-running. A man is stationed at the reel (*Figure* 177) to see that the cable pays off properly and to adjust the pulling tension if necessary. Care is taken to insure proper movement of the end of the cable through each block and to guard against any twisting in the spans.

Twisting of self-supporting aerial cable around the messenger is pre-

Please turn to page 72

TABLE XIV

Physical Characteristics of Messenger Used on Factory-Assembled Messenger-Supported Aerial Telephone Cable

Size	No. of Wires	Type	O. D. Inches	Weight Lbs/1000′	Breaking Strength Pounds
5/16	7/.104	Utilities Grad	.312	225	6000

TABLE XV

Stringing Sags and Tensions For Factory Assembled Messenger-Supported Aerial Telephone Cable

26 Pair 24 AWG

HEAVY LOADING DISTRICT

TEMP. °F	0°F	30°	60°	90°	120°	60°	Max.
TENSION (lbs.)	2150	1872	1624	1398	1208	Final	Final Sag
SPAN (ft.)	STRINGING SAGS (Inches)					Sag	0° Loaded
100	5.0	5.5	6.5	7.5	8.5	7.0	10.5
125	7.5	9.0	10.0	12.0	13.5	11.0	16.5
150	11.0	12.5	14.5	17.0	19.5	16.0	24.0
175	15.0	17.5	20.0	23.0	27.0	22.0	32.5
200	19.5	22.5	26.0	30.0	35.0	28.5	42.5

TABLE XVI

Stringing Sags and Tensions For Factory-Assembled Messenger-Supported Aerial Telephone Cable

51 Pair 24 AWG

HEAVY LOADING DISTRICT

TEMP. °F	0°F	30°	60°	90°	120°	60°	Max.
TENSION (lbs.)	2020	1782	1573	1392	1246	Final	Final Sag
SPAN (ft.)	STRINGING SAGS (Inches)					Sag	0° Loaded
100	6.5	7.5	8.5	10.0	11.5	10.0	12.0
125	10.5	12.0	13.5	15.5	16.5	14.0	18.5
150	15.0	17.0	19.5	22.0	24.0	20.5	27.5
175	20.5	23.5	26.5	30.0	33.0	28.0	37.0
200	27.0	30.5	34.5	39.0	43.0	36.5	48.5

Uniform

The insulators coming off the lehr above are *uniform*. Each one meets the same rigid standards for mechanical strength, accuracy of thread contour, and resistance to thermal shock. This uniform high quality means you can count on the same dependable performance from all your Armstrong Insulators. For full details on every model in the line, write Armstrong Cork Co., Glass and Closure Div., 295 Fifth Ave., New York 16, N. Y.

Armstrong
GLASS INSULATORS
for communications . . . for power

The other half of the Telephone's value

Calls received are just as important as calls made. They're the other half of the value of the telephone.

Reminding people of this is the job of the advertisement across the page. It is appearing in June and July magazines read by millions in areas served by all of America's telephone companies. Making telephone users aware of the full value of the service they get is good for telephone business everywhere.

Opportunity no longer knocks

...IT TELEPHONES!

Telephones ring wedding bells and cash registers. They get people acquainted. Make business run smoother.

In social life or business, the calls you make are only part of the value of the telephone. Often the calls you receive are even more important.

A date for Judy for Saturday night. An invitation to a luncheon for Mother. A neighbor inviting Jimmy over for a birthday party. A call for Dad, with good news about a job or a business order.

So in looking at your telephone bill, be sure to count the calls you get as well as those you make. Often it means the bill covers about twice as much service as you usually figure.

Day and night, every day in the year, few things give you so much for so little as the telephone. It takes you to people and it brings people to you.

BELL TELEPHONE SYSTEM

NEW TV SHOW..."TELEPHONE TIME"...with John Nesbitt's real life stories the whole family can enjoy. EVERY SUNDAY OVER CBS. See local newspapers for time and channel

FIG. 175:—Cable block placed on each pole in cable lead to facilitate stringing of the cable. These blocks should not be smaller than shown.

TABLE XVII

Stringing Sags and Tensions For Factory-Assembled Messenger-Supported Aerial Telephone Cable

101 Pair 24 AWG

HEAVY LOADING DISTRICT

TEMP. °F	0°F	30°	60°	90°	120°	60°	Max.
TENSION (lbs.)	1899	1711	1569	1440	1328	Final	Final Sag
SPAN (ft.)	STRINGING SAGS (Inches)					Sag	0° Loaded
100	10.0	11.0	12.0	13.0	14.5	12.5	15.0
125	15.5	17.5	19.0	20.5	22.5	19.5	23.0
150	22.5	25.0	27.0	30.0	32.5	28.5	33.5
175	30.5	34.0	37.0	40.5	44.0	38.5	45.5
200	40.0	44.5	48.5	53.0	57.5	50.5	59.5

FIG. 176:—Start of pulling section. Note use of "torque" bar on guide line held by lineman in foreground to prevent twisting of cable as it travels over the cable blocks.

vented by attaching a flat steel crossarm brace, 32" long, to the messenger, which is pivoted to enable the brace to ride over the pulling sheaves. A rope is attached to the end of the brace and held by a workman as the cable progresses (*Figure* 178). (*A* special cable leader with weighted arms that fold in and out when passing through the cable blocks may be used to prevent twisting of the cable and eliminate the need for a workman to hold the device in position.)

When the entire reel has been pulled, the cable end is dead ended at the pole leaving ample cable to make connections.

In open areas, the cable may be installed by towing the reel on a trailer behind the truck and paying out the cable on the ground beside the the pole as shown in *Figure* 179. In this case, the linemen follow behind to climb each pole and lift the cable up for laying over the cable sheave preparatory to sagging.

The sagging operation is performed while the cable is still in the stringing blocks. The stringing tension in the messenger is determined by pulling up to a precalculated sag for a given span. The proper sag is then obtained by sighting across the tops of two markers on each pole in the sighting span (*Figure* 180), and slacking off the cable, until it coincides with the line of sight. In long runs of cable between dead ends, sags are checked at more than one span to be sure that the messenger tension is uniform throughout. After sagging, the final dead end is made and the guys at the temporary dead ends are removed.

The cable is brought to its proper sag by means of a chain hoist (*Figure* 181). After sagging the section by sighting, the tension in the support strand is further checked by means of a dynamometer (*Figure* 182).

Figure 183 shows the method of fastening the cable at a corner. Two preformed dead ends are applied to the support strand in each direction from the pole, allowing the proper amount of cable between them so that a smooth bend can be formed. The support strand is not cut since it can be run continuous through and between the preformed dead ends and be used to support the cable at the bend. This method makes it unnecessary to cut and splice on additional sections of messenger strand to enable dead ending the cable on the corner pole with 3-bolt clamps in the conventional manner.

At each pole between the two dead ends, the binder tape is unwrapped from the cable for approximately one

FIG. 177:—Construction worker checking tension of cable being pulled by tow line to truck winch at other end of pulling section.

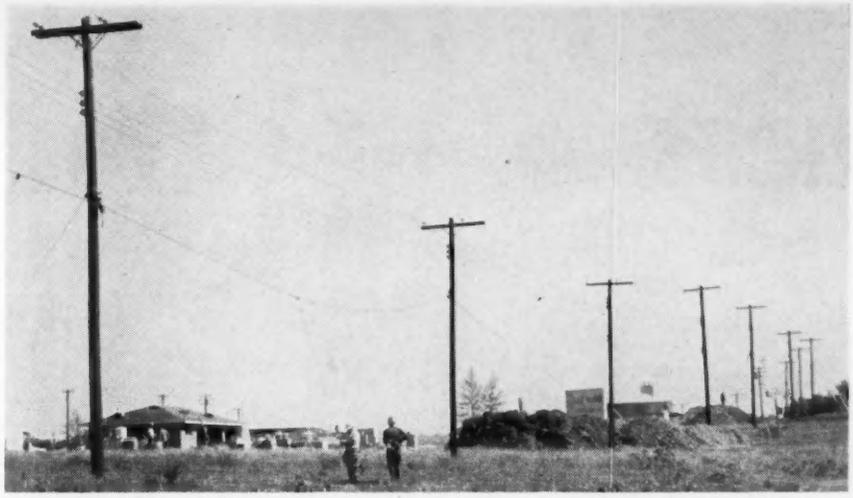


FIG. 178:—Cable progressing from pole to pole in pulling section.

FIG. 179:—Use of trailer to unreel factory-assembled messenger supported aerial cable in open areas for laying up on poles.

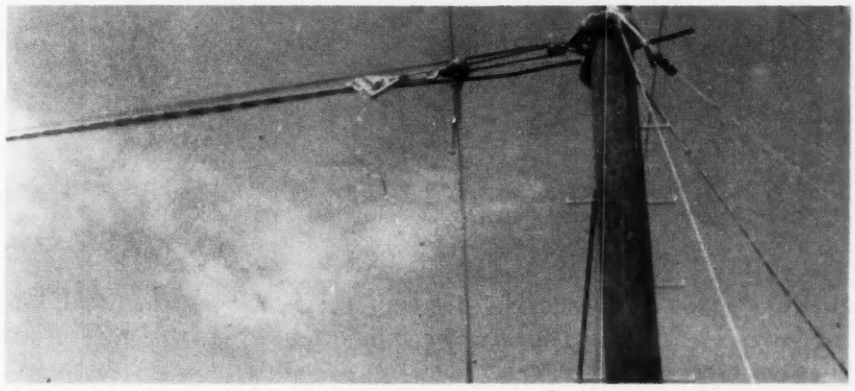


FIG. 181:—Use of chain hoist in pulling up and slacking off cable in sagging operation.

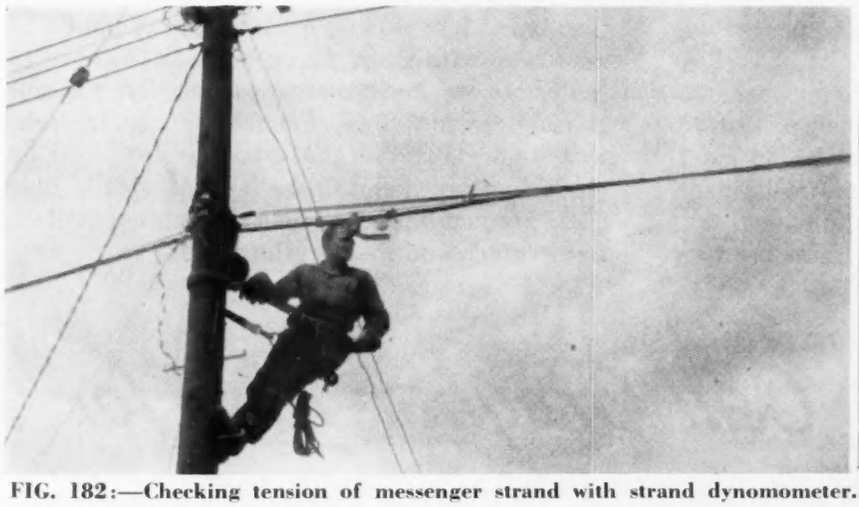


FIG. 182:—Checking tension of messenger strand with strand dynomometer.

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PLUS Control

RFL
Model 983
OPERATES OVER WIRE CIRCUIT OR MICROWAVE

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2-Way Clear Voice and Reliable Control

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Frequency-Shift Fail-Safe Operation

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1. Slip Over Wire
2. Drive Home Nail
3. Attach Clamp

IT'S AS SIMPLE AS THAT!
Costs ⅓ less than Metal Guards and No Maintenance Problem

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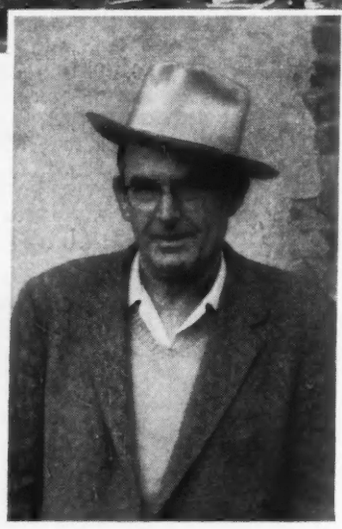
S. E. OVERTON COMPANY
SOUTH HAVEN, MICHIGAN

Scenes like this were commonplace after a tornado roared through the central Georgia area served by Public Service Telephone, on the night of March 13, 1954. Over 5 miles of its toll circuit was down between Butler and Macon. Many miles of open-wire line was also out of action and in some places entire half-mile sections of pole line had completely disappeared. Yet close cooperation between emergency line crews, Graybar, and its suppliers helped restore service inside of 4 days.



we know we can rely on Graybar!

says: H. C. BOND, *President*
Public Service Telephone Co., Reynolds, Georgia

"It was a pretty grim picture — our lines were down all over the place. And to make matters worse, they were mixed up with the power lines on joint-use poles.

"The first thing we did was call Graybar in Atlanta for help. Even though it was Sunday, we had a shipment of repair sleeves, block and tackle, and tools here by 2 P.M. — enough to outfit the 25 volunteer linemen who showed up to help us restore temporary service. Henry Mote was also on hand and effectively expedited an emergency shipment of wire which arrived the following day.

"Though the complete repair job took over two weeks, we had temporary service going on all lines by Thursday morning thanks to the wonderful way everyone pitched in to help.

"Fortunately tornados don't happen by every day, but in emergencies or for our everyday needs, Graybar is just as close to me as my telephone. I've grown up with them, because for as far back as I can remember my father was a Graybar customer. It just seemed natural for me to continue dealing with an organization that could always be counted on for service, helpfulness, and nationally-recognized product lines. Graybar's assistance is always freely given and means a lot to us." 525-226

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
Graybar Building, New York 17, N.Y.

Call Graybar first for . . .

"H. C." Bond and Graybar Representative, Henry A. Mote go over plans to cut over all five PST exchanges from magneto to dial operation this October. Mr. Bond's father, who founded the Public Service Telephone Company in 1911, was one of Mote's first customers on beginning his career with Graybar 28 years ago. Public Service Telephone serves all or part of 7 counties in central Georgia.

Public Service Telephone has standardized on tools . . . via Graybar, too. From rope to ladders . . . hand tools to safety equipment, PST linemen are provided with modern, efficient equipment manufactured by Graybar suppliers who are recognized as "tops" by linemen across the nation.

You too can benefit from Graybar's services! Pole line supplies for maintenance and new construction . . . exchange and office equipment . . . linemen's tools and safety equipment — all are conveniently available from Graybar warehouses located near you. Call us for any telephone need. Like you, we are proud of our independent status. Graybar is owned solely by its operating and retired employees.

FIG. 180:—Sighting along cable span to check for proper sag of cable. Man in far distance is pulling up cable with chain hoist to produce desired sag.

foot on either side of the cable block and bonded to the messenger by means of a lashing wire clamp as shown in *Figures* 184 *and* 185. The messenger is transferred to the messenger clamps, which are then tightened.

Frequent grounding of the messenger is advisable to protect against lightning or power crosses damaging the cable. Grounding is obtained through anchor guys on the messenger and, where a multigrounded neutral power system is in joint construction with the cable, by bonding to the vertical grounding conductors of the neutral.

It is considered good practice to leave the cable at least one day be-

FIG. 184:—Workers preparing cable for supporting messenger in suspension clamp on pole in straight section of lead.

fore splicing the insulated conductors, so that tension may be equalized throughout the length. These splices are then made in accordance with standard procedures for the type of telephone cable employed as indicated in *Figures* 186 *and* 187.

Uses of Factory-Assembled Messenger-Supported Aerial Cable

FACTORY - assembled messenger-supported aerial cables are suitable for any type of aerial installation. However, this cable assembly has very definite installation advantages for construction over rights of ways, in wooded, inaccessible or congested areas and for any project where the cable cannot be lifted up and lashed to the support strand as it is unreeled along the pole lines such as when cable must be placed on the side of the poles away from the street. This type of telephone cable requires only a minimum of special equipment. It would appear that factory-assembled messenger-supported aerial cable will find a place in the telephone plant.—*(To Be Continued.)*

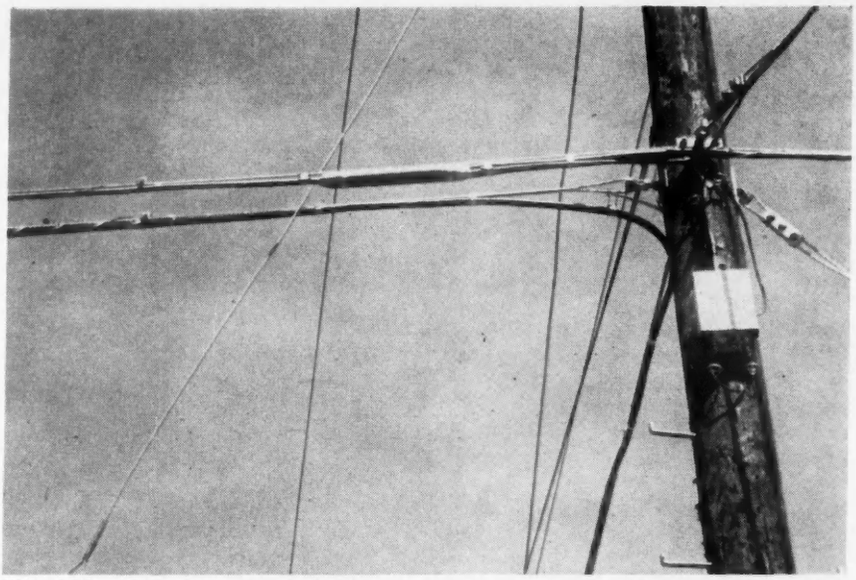


FIG. 183:—Use of preformed grips to support messenger of factory assembled messenger supported cable at corner pole.

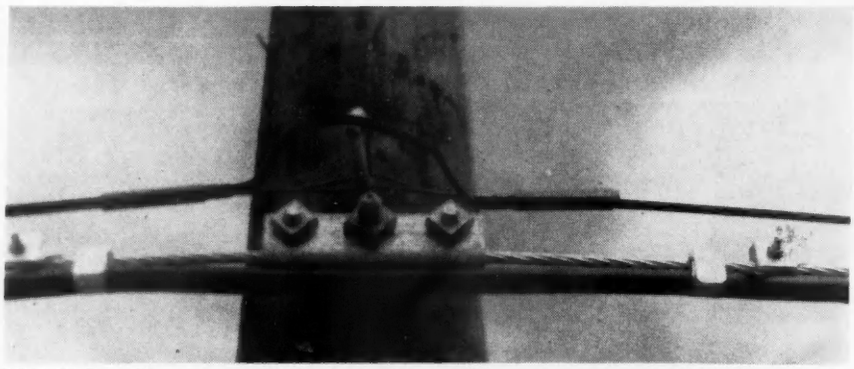


FIG. 185:—Showing method of attaching cable messenger to pole and terminating binder straps on each side of the pole, using lashing wire clamps.

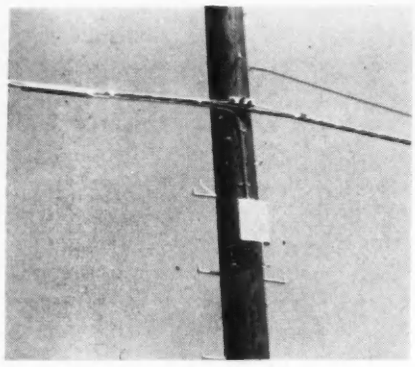


FIG. 187:—Showing neat make-up of terminal stub splice in factory-assembled messenger-supported aerial cable.

FIG. 186:—The splicing of cable terminal stub to factory-assembled messenger supported cable differs from standard procedure only in the removable of the polyethylene jacket to expose the lead sheath for splicing. Splicer has just completed the splice and is attaching sleeve to strand with lashed cable supports.

Economy

I place economy among the first and most important virtues, and public debt as the greatest of dangers to be feared . . . To preserve our independence, we must not let our rulers load us with perpetual debt . . . We must make our choice between economy and liberty or profusion and servitude . . . If we run into such debts, we must be taxed in our meat and drink, in our necessities and our comforts, in our labors and in our amusements . . . If we can prevent the Government from wasting the labors of the people, under the pretense of caring for them, they will be happy.—THOMAS JEFFERSON.

"It's IRRADIATED and the dielectric strength is doubled!"

NEW . . . IMPROVED

SUPERIOR TELEPHONE CABLE

NOW contains a polyethylene tape* developed by radiation chemistry!

New, improved SUPERIOR TELEPHONE CABLE now provides three additional features to assure you of top performance under all conditions:

- **Doubled dielectric strength . . .** for greater lightning protection.
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- **Insulation "graded" to conductor sizes . . .** to match closely the universal transmission standards for loading coils and terminating equipment.

SUPERIOR CABLE is accepted by REA and conforms to REA Spec. PE14.

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New Superior "Super-Splice" makes the splice permanently as good as the cable. An REA Standard. Write for details.

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SUPERIOR CABLE CORPORATION

Hickory, North Carolina

*Irrathene ® irradiated polyethylene film, a General Electric product.

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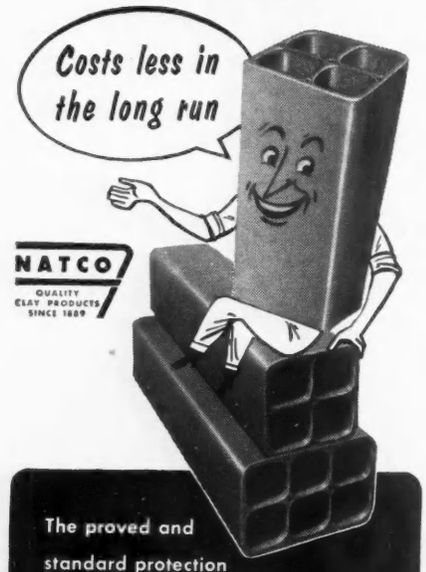

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PREVENT DISEASE & INFECTION!

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SAFE! FAST! Keeps away Chiggers, Ticks, Mosquitoes, Flies. A few second spray protects you all day!

12 Oz. Bombs

Do you know that biting ticks transmit to humans twice the number of tularemia cases than handling or skinning of rabbits.

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76 Branch Offices in the United States

"Spotlight on Plant"

(Continued from page 51)

lighting methods. Good lighting sharpens the telephone worker's most important faculty—sight.

In recent inspections of central offices, the writer has been impressed by the emphasis given to better illumination. This is not too unexpected in the commercial or business office rooms, but the attention being given to properly lighting other areas in telephone buildings is an encouraging trend. *Figure* 1 shows the fluorescent lighting arrangement recently installed in a dial equipment room in a telephone central office in Iowa.

A craftsman, no matter how skilled, cannot do his best in a minimum of time unless the work is well-illuminated. Even a man with the eyes of an eagle cannot distinguish colors in the dark. For some close work in restricted areas, a portable light-weight electric extension lamp with suitable reflector is indispensable. Where color discernment is important, these lights use a "daylight" lamp which approximates daylight illumination.

Critical jobs, peculiar to telephone and radio equipment, have spurred development of new devices to speed up work. The need for localized illumination under certain conditions is so important that at least one make of a versatile volt-ohm-milliameter includes a built-in electric lamp to illuminate its color-coded meter scales.

A widely-used electric "soldering gun" incorporates, among other desirable features, a built-in electric lamp that is so located that it throws unobstructed light directly on the spot being soldered.

Another example is a relatively inexpensive illuminated inspection mirror which utilizes a clear plastic rod with a flashlight at one end and a small round mirror hinged to the other end. The light is transmitted through the rod to the adjustable mirror, which directs the light on the object. The mirror in turn reflects back the image of the object otherwise difficult or impossible to see. See *Figure* 2-A.

This principle of guiding light to the point of work by means of a clear plastic rod is used in another useful switchboard tool which omits the mirror and instead has the end of the rod cut off at an angle. This permits the wedge-shaped rod end to be used to operate or spread, for

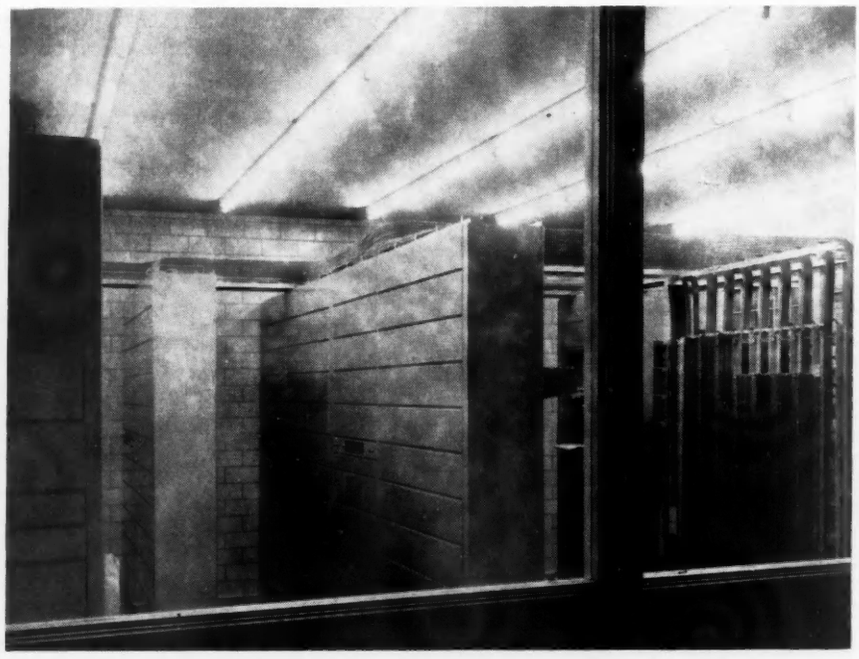
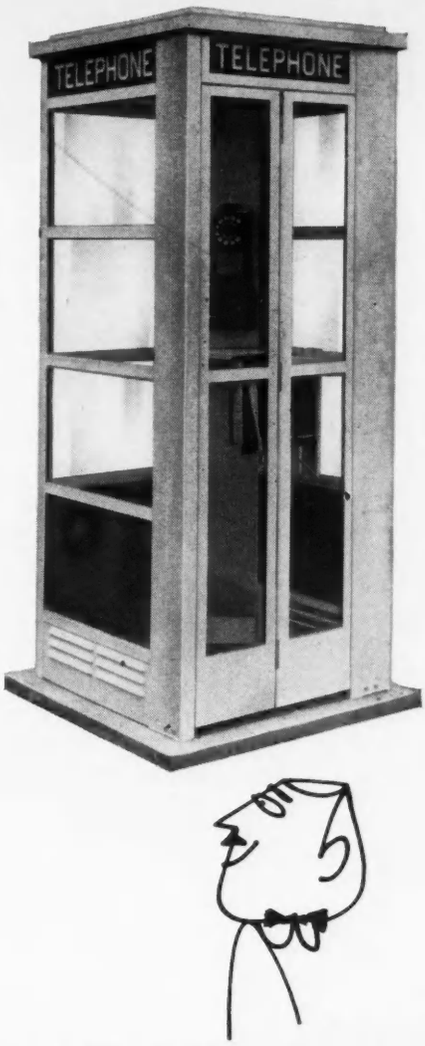


Fig. 1. Photograph of Independent telephone dial central office equipment room illuminated by rows of fluorescent lamp fixtures centered over each aisle. Note picture window which allows public to view dial switching system from commercial office without entering the equipment room. (Photo from Forest, Iowa.)

heads turn,

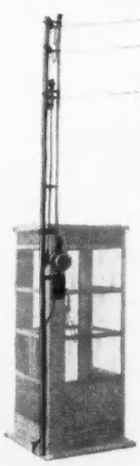


coin boxes jingle . . .

. . . *when you use Alcoa Aluminum Booths!* And it's a merry tune designed to help keep commercial managers gleeful and contented. Smart . . . clean . . . colorful, this booth really draws the eye (*and* the customers!) . . . It's comfortable, too. Roomy, well-ventilated, well-lighted, it makes a friend every time it's used. The Alcoa booth's strong construction keeps maintenance down. Grease and pencil marks wipe off its hard surface easily.

OTHER ADVANTAGES: folding doors with door closer, fluorescent lights, wire inlets, directory shelf and racks. Your choice of red or green lower panels. Booth shipped knocked down with full assembly instructions.

Cat. No. S-2998
Dimensions: 33½"x33½"x86½"
Weight: 360 lbs.



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Cat. No.	Description	Each
TBM-12	12-foot Mast (std.)	$40.50
TBM-14	14-foot Mast (std.)	42.50

Highway Directional Sign

Versatile highway sign tells motorists where outdoor paystations are located. Made of 14-gauge steel, overall size 24x24 inches, finished in blue and white baked enamel. Choice of 3 reflectorized emblems, "HERE," "1 MILE," "2 MILE," (to be affixed to complete sign). Holes for easy mounting on two pole extension fixtures.

Cat. No.	Description	Each
S-7272	Highway Directional Signal	$9.80
S-4133	Emblem "2 Miles"	1.10
S-4132	Emblem "1 Mile"	1.10
S-4131	Emblem "Here"	1.10

Address: Automatic Electric Sales Corporation
1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300

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ORIGINATORS OF THE DIAL TELEPHONE

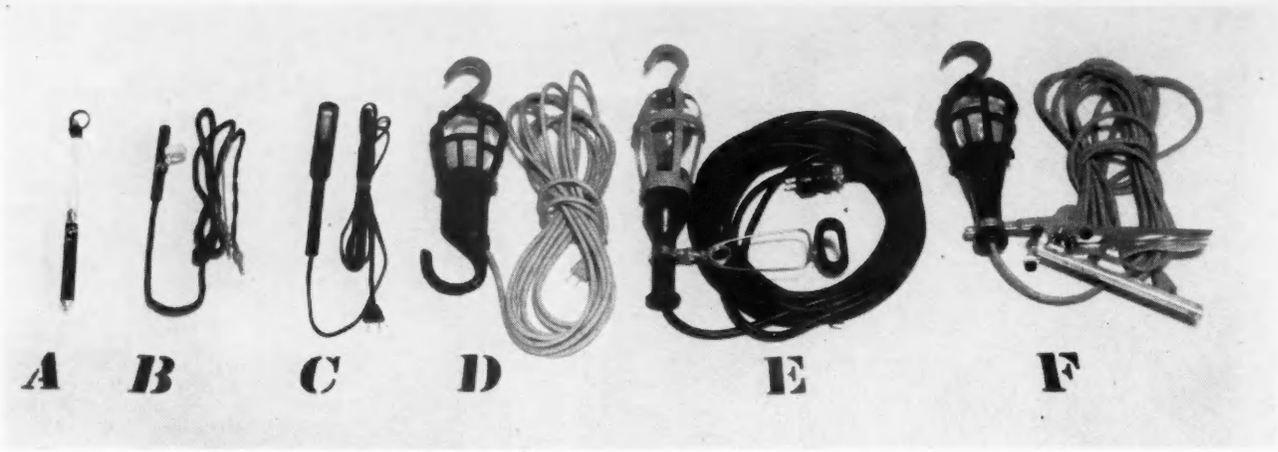

Fig. 2. Portable lighting aids used in telephone installation and maintenance work. A and B are illuminated inspection tools. C, D, E, and F are electric hand lamps (extension lights) equipped with *insulated* guards protecting the electric lamps. Spring-type mounting clamps on the handles of E and F are easily removed when not needed.

example, relay springs and direct intense light on the surface of the associated contacts. A plastic magnifying lens is mounted on the handle of this tool so that the contacts may be closely inspected. See *Figure* 2-B.

Admittedly, these random examples save time chiefly in specialized situations. They are mentioned because they are straws in the wind illustrating the existence of lighting problems peculiar to our business. The following example of a lighting aid, because of its broader application potentialities should be of equal, if not more, interest.

For desk and bench use there are handy, easily-adjustable electric lamp assemblies, sometimes called floating or swinging types, going under such typical trade names as Dazor, Flexo, Swivelier, Luxo, or E-Z Swinging fixtures, that are used for supplementary lighting where considerable adjustability is desired. This suspension-arm type of local light-source permits one to speedily and conveniently alter its position, intensity, and direction to obtain a "correct fit" for each seeing task.

These lights can be secured in many models: portable or clamp-type for bench, desk or table; pedestal or floor-type; fluorescent or incandescent; special "sight-booster" models incorporating both magnification and lighting, etc. The common feature in all cases is the swiveling extension arms that provide easy and fast positioning that, once set, remain fixed without locking. Such fixtures are real time-savers.

A reasonable quantity of illumination must be given to all telephone work areas because it is no idle statement that "he works best who sees best." The *quality* of this light must aid seeing, not interfere. The coordination of these two characteristics of a lighting system with the whole environment should be visually comfortable. Shadows and reflections, for example, are minimized in a well-engineered lighting installation. In those cases where it is impractical to eliminate shadows and reflections, care should be taken to make sure they cause no serious interference with comfort or visibility.[3]

Building architects and electrical engineers achieve these results because of a better appreciation and understanding of modern lighting requirements in general, and the specialized lighting problems of public utility buildings in particular, plus the growing availability of a greater variety of light sources and devices. The advisory services of experienced lighting specialists are available from most power companies. This consulting source may be used by your architect or yourself to assist in planning the correct type and quantity of lighting to install in either new or remodeled telephone buildings.

Our eyes are of little direct value in setting specifications. In this respect, Lord William Thompson Kelvin (1824-1907), famous British physicist, stated: "I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science, whatever the matter may be."

Measuring Illumination

FORTUNATELY, illuminating engineers have developed standards,

[3] "*American Standard Practice for Industrial Lighting*," 40-*page pahphlet, American Standards Association, Inc., All* 1-1952; *UDC* 628.96:658.2. *Sponsored and Published in* 1952 *by Illuminating Engineering Society*, 1860 *Broadway Street, New York* 23, *N. Y.*

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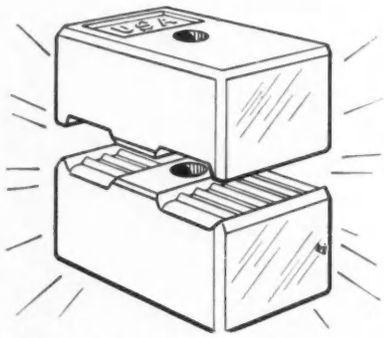

Made of highest quality dry-process electrical porcelain . . . Porcelain Products telephone insulators assure long, continuous service . . customer satisfaction. Porcelain Products, Inc. has served the telephone industry for 62 years, offering a complete line of insulators that meet AT & T and REA specifications . . . simplifying installation . . . reducing maintenance. Write for complete information, today!

PORCELAIN PRODUCTS, INC.
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specifications, and measuring apparatus that take the guesswork out of analyzing lighting problems and evaluating lighting results. One of the helpful, portable light-measuring instruments widely used for determining quantity of illumination is the pocket-size, color-corrected light meter.

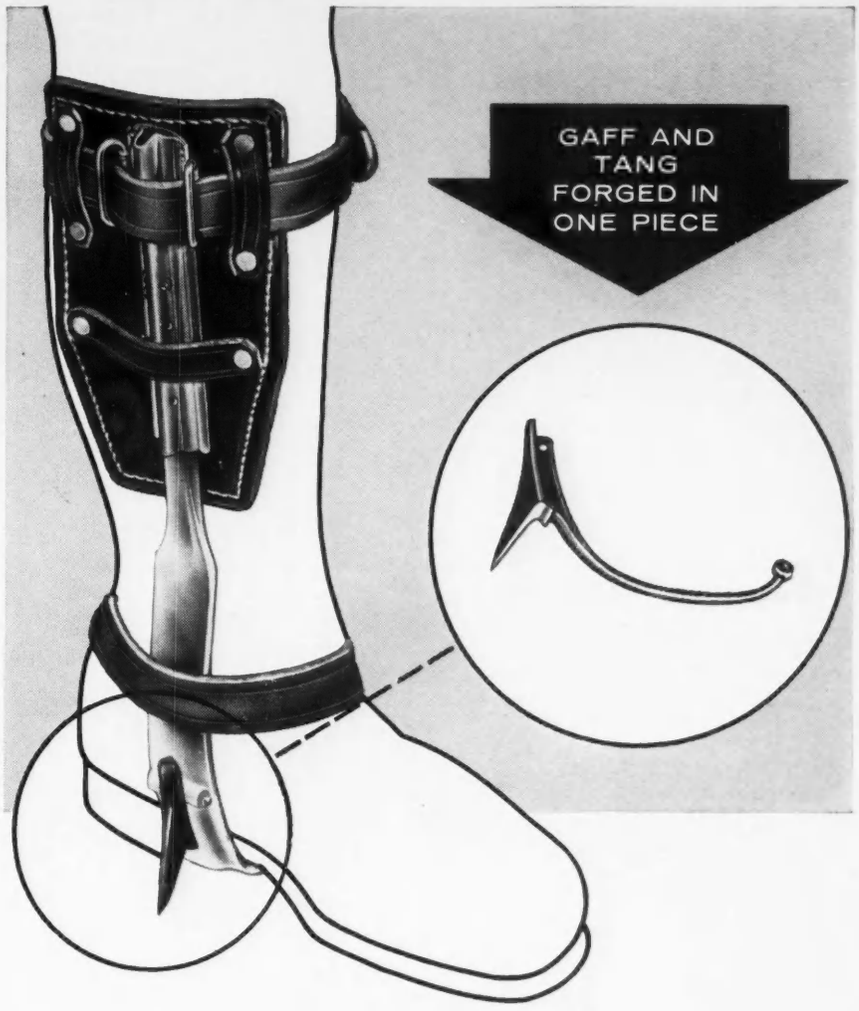
This photocell-type meter, weighing only 7 ounces, incorporates a light-sensitive plate and a microammeter calibrated to read directly in footcandles over a range of from 0 to 240 footcandles (full scale), with a convenient pushbutton for reducing the range to 0 to 120 footcandles. This meter automatically furnishes correction for both color and direction of the light that strikes it. The built-in color filter changes the spectral response of the instrument to that of the human eye. Because of this inherent color correction, the c/o light meter can be used to measure fluorescent color correction, the c/c lighting installations as well as natural daylight.

The use of a light meter during such inspection trips as those previously suggested will provide lighting level information that, when recorded, can be used for studying and comparing results, as well as for future reference and guidance.

A light meter will show, for instance, that the illumination of vertical surfaces from a general lighting system is about half the average horizontal illumination received at the same place. This condition is one of the reasons that portable electric hand lamps, sometimes called extension lights," are so widely used. Some useful, well-designed 115-volt A. C. hand lamps frequently found in telephone central offices are shown in *Figures*, 2-D, 2-E, and 2-F.

As would be expected, the effectiveness of any lighting system is hampered by (1) the use of deteriorated lamps; (2) the presence of accumulated dust and dirt on the reflecting or transmitting surfaces of the light fixtures; and (3) soiled ceilings and walls. Periodic cleaning may result in as much as 50 percent increase in the maintained value of illumination. A well-planned cleaning program is required to achieve the lowest cost of operation in terms of footcandle hours per dollar. The time between cleaning periods will depend upon the depreciation rate which can be established

Please turn to page 84



Here's why M-S-A–Brooks Adjustable Climbers provide greater safety–durability

Gaff and tang forged in one piece! That's a statement that makes plenty of safety-sense to workers who depend on a small "tooth" of steel to support their weight high above the ground. This feature is exclusive with the M-S-A–Brooks Adjustable Climbers. And there's more to the story. The gaffs and leg irons are forged from high quality, medium carbon steel, heat treated to assure the proper balance of hardness, toughness and ductility.

Inspection plays an important role, too. Every leg iron and gaff is examined by the magnetic particles method. Statistical sampling is used for impact, absorption, Rockwell hardness and metallurgical tests. And all this means greater safety, longer wearing qualities . . . less maintenance.

Pads and straps are made of top grain steer hide with chrome leather reinforcement on the leg side of the calf pad. The result—maximum comfort on the job.

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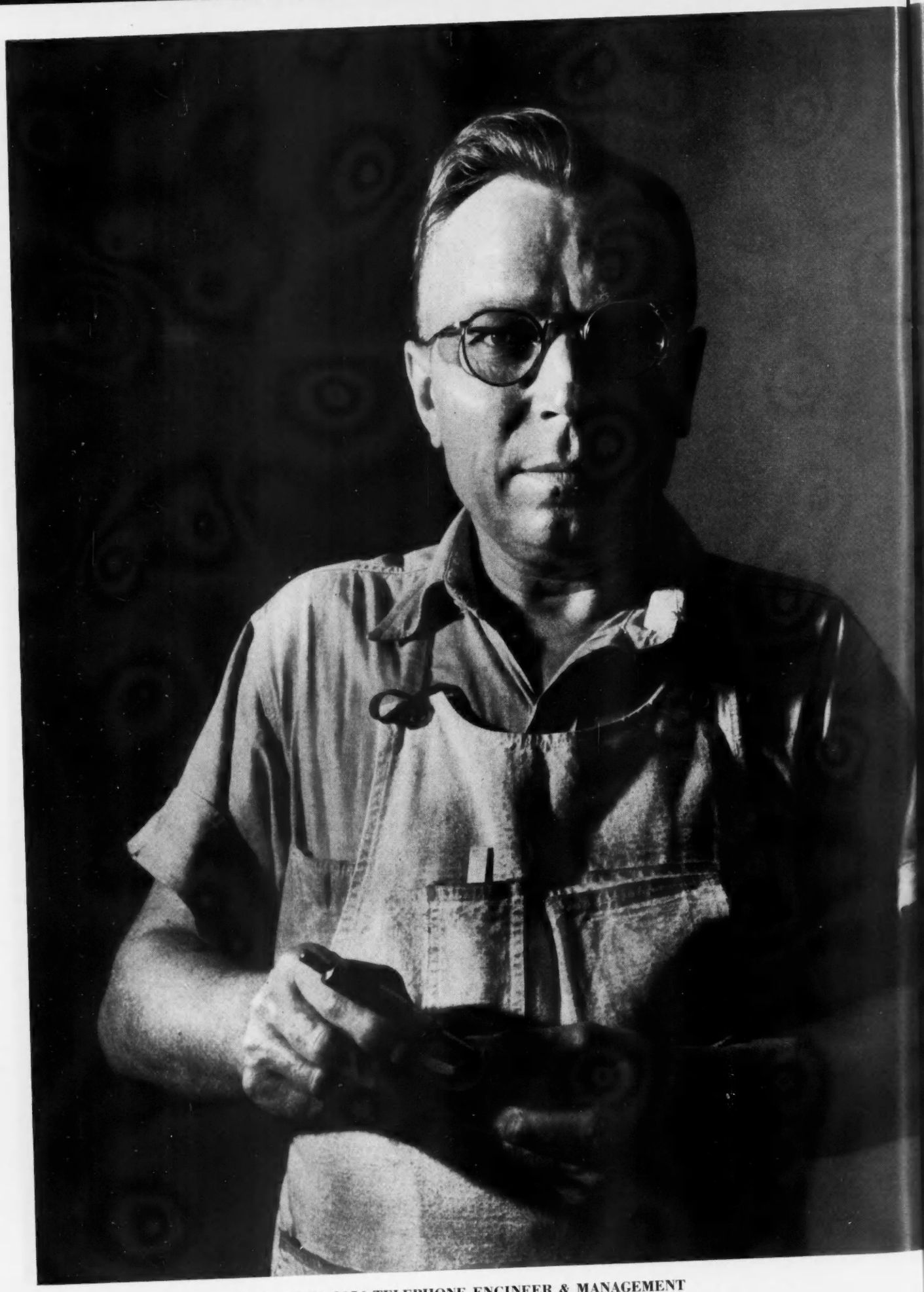
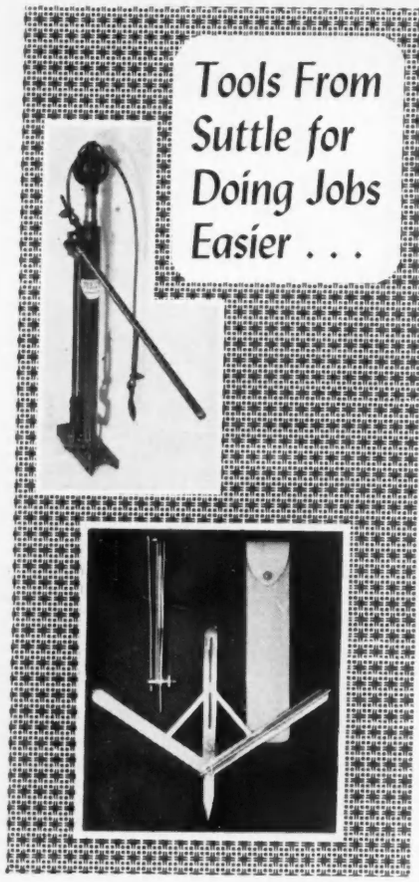


PORTRAIT OF AN INDUSTRY

The Machine Operator

He sets up and operates machines. Parts turned out may require checking with a micrometer to the thousandth of an inch. His is a key role in the production of dependable telephone equipment for the Bell telephone companies.

Like the lineman and the operator, he lends his special skills and talents to help achieve the common goal of the telephone industry . . . providing better telephone service for America.



For example, here are two outstanding tools for pole line work that will pay for themselves many times over, both in labor savings and better construction.

Van Webb Hydraulic Jack

In repair work it's ideal for straightening poles — just insert a pike pole in the special cup and apply tons of pressure. For pole pulling you get 15,000 pounds without the pulley, or 7,500 pounds with a minimum of effort. Yet it weighs only 55 pounds.

Dillon Bisector

The patented device that quickly shows you exactly where to place an anchor to get correct guying for any corner, or angle, pole. Keep it in your vest pocket.

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by the use of the light meter to measure illumination at regular intervals after the initial installation.

Cleanliness Is Essential

GOOD LIGHTING also does its part in promoting cleanliness. It is generally acknowledged that clean, sanitary and healthful working conditions are required for the successful performance of most jobs.[4] Furthermore, if an additional reason is needed to keep telephone premises scrupulously clean, experience indicates that the presence of excessive amounts of those four saboteurs of all electrical and mechanical systems—dust, dirt, grit and grime—do nothing to improve the operating characteristics or extend the useful life of telephone switching systems of any kind, make or vintage.

Telephone industry practice includes furnishing dust covers for switching system apparatus. This custom takes forms, from individual or group relay and switch covers, to the use of overall cabinets as pictured in *Figure* 1.

It should be remembered that because these dust covers are not hermetic enclosures, their effectiveness can be increased still further by continuing to maintain acceptable standards of building cleanliness. It is important also to remember that when loose dust is encountered, it should be removed without stirring it in the air and allowing it to re-deposit itself. In other words, don't *move* dirt *remove* it!

Detailed methods of cleaning in economical, yet satisfactory ways, are beyond the scope of this discussion but several very interesting, applicable references on the subject are included in the appended list of supplementary references for those who wish to benefit from the experience of others.

In any event, perhaps because the hand does best what the eye sees best, good lighting is a powerful incentive and encouragement for better housekeeping.

Portable Hand Lamps

THE DEMANDING requirements for safe, flexible and adequate portable electric hand lamps throughout a telephone organization are important enough to justify serious and careful consideration in the choice of these vital work-aids. Unfortunately, in some instances, extension lamps are considered to be so commonplace that little thought is given when they are purchased to the variety of services they are expected to render. This is a situation where that booby-trap cliche, "one is as good for the purpose as another," was never more wrong.

One reason for this situation may be the lack of appreciation of the fact that a wide range of styles, sizes and kinds of portable hand lamps is available from a number of sources. One manufacturer alone makes over 100 different types!

Such trade names as Black, McGill, Royal, Standard and Woodhead — just to mention a few — are companies that manufacture hand lamps that will meet rigorous standards of safety even in the hands of inexperienced workers. Many of these hand lamps, or their components, carry the label of the Underwriters' Laboratories, Inc., certifying that certain safety standards have been built into the product. This non-profit examination and testing service enterprises is sponsored by the National Board of Fire Underwriters.[5]

One interesting development that forces more attention to be given to choosing the right types of portable extension lamps is the steady trend toward reduction in size of communication equipment components and assemblies, especially in electronic apparatus. While this permits more efficient use of building space to house the equipment, it also intensifies the need for good illumination during the manufacturing, installing, and operating stages.

Standard designs of portable electric hand lamps, such as shown in *Figure* 2-*D*, 2-*E*, *and* 2-*F*, are equipped with reflectors, insulated guards for the lamps, and swivel hooks. They can be used even in fairly crowded place. However, for extra-tight spots and other cramped-quarter situations, there is available a slim.

---

[4] *"Dust is Dangerous,"* 116 *pp. by C. N. Davis, published in* 1954, *by Faber and Faber, Ltd., distributed by John de Graff, Inc.*

[5] *"Testing For Safety—Organization, Purposes and Methods of Underwriters' Laboratories, Inc.,"* 35 *pp. Published by Underwriters' Laboratories, Inc.,* 207 *East Ohio Street, Chicago* 11, *Ill.*

lightweight hand lamp, shown in *Figure* 2-C, that is oftentimes more useful than a run-of-mine flashlight. This inspection lamp assembly is only 1 1/16 inch in diameter, uses an insulated fiber, two-way reflector, and a lamp that may be either a standard 7-watt or a 15-watt clear bulb with a candelabra base which can be purchased anywhere.

The handle and cord of this inspection light are made of an oil-proof rubber compound. The reflector is easily removed. When required, its convenience can be still further enhanced by the addition of a spring type clamp such as shown attached to the handles of *Figure* 2-*E and* 2-*F*.

Cost-conscious companies use the "rough service" class of bulbs in their portable hand lamps to reduce breakage from shock and vibration. Such a lamp is marked "rough service" on the end of the globe itself.

Fluorescent Trouble Light

ONE OF THE less frequently encountered, but none the less useful in its place, types of portable electric lamps is one that uses a 15-watt fluorescent tube mounted in a metal trough that also serves as a reflector. The reflector is cradled, and can be rotated, within a wire skid that is an integral part of the assembly. A wire guard protects the lamp. A hook at one end is provided for hanging. All-in-all it is a handy trouble shooting lamp, flexible enought to solve certain temporary illumination problems around telephone buildings.

In summary, it is quite evident that telephone workers' hands depend upon eyes for their skill and speed of job-performance. And eyes, and jobs, require adequate lighting consideration and treatment to provide conditions conducive to getting the job done in a reasonable amount of time.

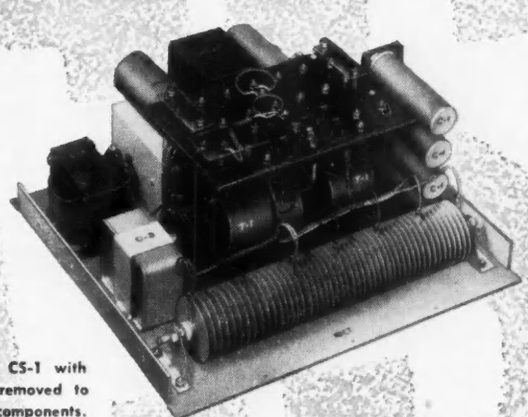
In the economics of business—and the telephone business in particular—the element of time is far more critical and valuable than some people apparently realize or are willing, by their actions, to admit. A telephone man's most limited asset is time.

Money can be earned, it can be saved, it can be borrowed—it can even be stretched—but each individual's allotment of time is rigidly fixed. We can, however, by wise action compress more accomplishments

Continued on next page

TELEPHONE ODDITIES by HIGGINS
IN TURIN, ITALY, A MYSTERIOUS TELEPHONE CALLER, BELIEVED TO BEAR A GRUDGE AGAINST MARGHERITA TRIOLA, SENT TO HER HOUSE DURING THREE WEEKS: THE FIRE BRIGADE; TWO LUNATIC ASYLUM ATTENDANTS WITH A STRAIT JACKET; SEVEN MIDWIVES; A SMALL ARMY OF ELECTRICIANS; TWO DOCTORS; AN AMBULANCE; RADIO AND GAS REPAIRMEN; PLUMBERS AND PAINTERS AND TWO UNDERTAKERS
?
DID YOU KNOW THAT THERE ARE 56,243,000 TELEPHONES IN SERVICE IN THE U.S.?
HELP!
A FLORIDA FOREST SERVICE LOOKOUT WAS ON DUTY IN HIS FIRE TOWER WHEN HE GOT A PHONE CALL-IT WAS TO INFORM HIM THAT HIS TOWER WAS ON FIRE
TOM HIGGINS JR

FLOTROL Carrier Supply units



Model CS-1 with cover removed to show components.

FLOTROL CARRIER SUPPLY UNITS are designed to supply regulated 130 volt plate current for carrier or repeater operation. The units normally operate from 115 volt 60 cycle single phase power supply, and will automatically transfer to a built-in standby vibrator which operates from the exchange battery upon power interruptions, maintaining uninterrupted plate current during power failures. Regulated voltage is maintained during both normal and standby operation. CS units are housed in attractive light gray steel cabinets, and can be mounted on the wall or in a 19-inch relay rack.

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POWER EQUIPMENT FOR COMMUNICATIONS AND INDUSTRY
FLOTROL PIONEERS IN DEPENDABILITY SUB-CYCLE

In conclusion, the typical products and their applications mentioned in this discussion are illustrative of devices that are aimed toward making each hour's efforts still more productive and valuable. More often than not, properly using these and similar tools reward us with a high rate of dividends on the relatively small investment usually involved. For example, if intelligently selected and correctly applied these work aids will generally save their initial cost on the first job or two—from then on, profit-wise, it's all clear sailing.

There is an extra dividend that very often accrues from an old adage: "You can pay a man to work for you, but you must win his heart to have him work *with* you." It is difficult to find a better way to convince telephone workers that they are "on the team," than by being sure that they are supplied the necessary tools, including test equipment, to efficiently perform the work that they are employed to do.

Supplementary References

(1) "Introduction to Engineering Economy—The Engineer Does For One Dollar What Others Do For Two," (Book) 2nd edition, 519 pp., by B. M. Woods and E. P. DaGarmo, published by the Macmillian Company ,1953.

(2) "Consumer Price Index," issued monthly by U. S. Department of Labor, Bureau of Labor Statistics, Washington 25, D. C. (Free)

(3) "A New Technique in Sweeping and Dusting," by R. C. Bacher, Buildings—The Magazine of Building Management, Vol. 54, No. 11, November, 1954, pp. 24 and 25.

(4) "Custodian-Engineer — Methods and Procedures, Preparation and Selection of Materials, Care and Use of Tools and Equipment," (book) 235 pp., by Messrs. Brown, McDorman, Larson and Kee, published in 1954 by Los Angeles Trade-Technical Junior College, 1656 South Olive Street, Los Angeles 15, California. (price $3.00)

(5) "Recommended Practice for Supplementary Lighting," 16 pp., reprinted from November, 1952, issue of Illuminating Engineering by the Illuminating Engineering Society.

(6) "Be Safe—Use Proper Extensions," by George MacDonald, National Safety Council, published in Better Maintenance—The National Magazine for Commercial, Industrial and Institutional Buildings, Vol. 3, No. 3, March, 1956 ,pp. 11 and 17.

(7) "Light: New Source of Sight," by Francis Bello, *Fortune*, May, 1956, pp 138-141, 199, 200 and 204.

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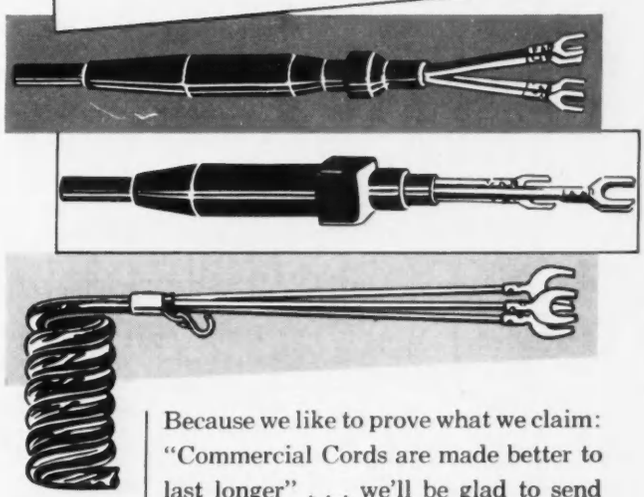

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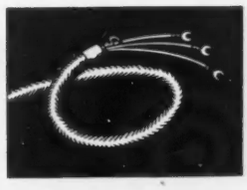


QUALITY CORDS FOR ALL MAKES AND TYPES OF TELEPHONE INSTRUMENTS

"Over-The-Horizon" Tests

(Continued From Page 48)

medians and the comparatively slow variation of hourly medians combine to produce a low signal, the superimposed rapid fading can cause momentary fades down into the noise level unless the transmission margin is found to be ample. However, the required margin can be reduced considerably by the use of space diversity in reception.

Space diversity can be achieved by receiving a signal simultaneously on two or more antennas spaced many wavelengths apart, using a separate receiver for each antenna, and combining the outputs to obtain the strongest instantaneous received signal. Use of this technique in over-the-horizon systems does not materially effect long-term signal variations, but is useful in reducing the effective range of the rapid fading.

Results of the space-diversity tests, which were a part of the test program, showed that substantially the full theoretical diversity improvement was realized at both test frequencies with a 200-foot antenna separation. In these tests, the better signal received through two antennas and associated receivers was chosen from instant to instant by automatic switching equipment. The percentile signal strength (the value exceeded for all except 1 per cent of the time) with the diversity arrangement was approximately 10 db higher than the corresponding signal strength from a single receiver. This is the improvement expected when two uncorrelated Rayleigh distributions are combined by switching-type diversity equipment.

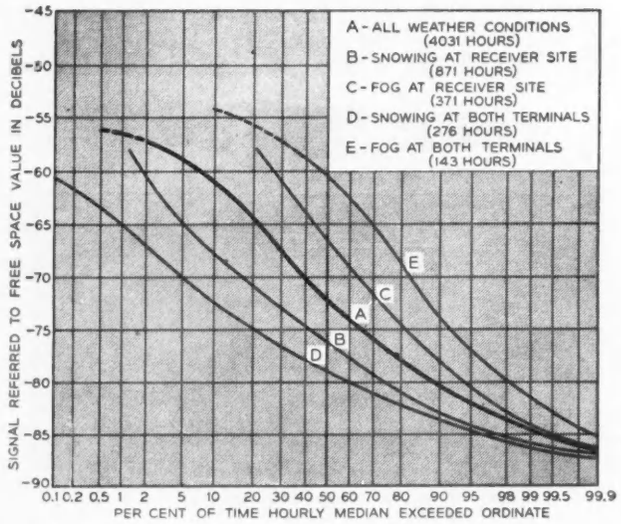

A - ALL WEATHER CONDITIONS (4031 HOURS)
B - SNOWING AT RECEIVER SITE (871 HOURS)
C - FOG AT RECEIVER SITE (371 HOURS)
D - SNOWING AT BOTH TERMINALS (276 HOURS)
E - FOG AT BOTH TERMINALS (143 HOURS)
SIGNAL REFERRED TO FREE SPACE VALUE IN DECIBELS
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.5 99.9
PER CENT OF TIME HOURLY MEDIAN EXCEEDED ORDINATE

FIG. SEVEN:—How weather conditions, particularly snow and fog, affected transmission.

Some effects of snow and fog for November through April are shown in *Figure* 7. The collection and segregation of data for this purpose was undertaken because early in the tests it was observed that the signal levels seemed to be lower than usual during snowstorms yet higher than usual during conditions of fog. The curves distinguish between the hourly periods of the 505-mc tests during which snowfall occurred and those when fog was present. Curve A is a cumulative distribution that includes all the hourly median signal levels for the six-month period. Curve B includes only those hours when snowfall was reported at the receiver site, and curve C includes only the hours when fog was reported. From the 50 per cent points on these curves it may be seen that the median signal was reduced about 4 db during hours of snowfall and increased about 6 db during hours of fog.

These effects are even more striking when weather observation at the transmitter site are included. The cumulative distributions of curves D and E include only the hours when snow and fog, respectively, were reported at both ends of the path. Compared with the median signal for all hours, that for snowfall at both terminals shows a reduction in signal strength of about 6.5 db and that for fog at both terminals shows an increase of about 12 db. There was some evidence of signal reduction during rainfall, but the effect was less pronounced than for snowfall.

The utility of these results lies in their providing a basis for engineering new communication systems using over-the-horizon radio links. Specifying the transmission requirements and margins for such systems is essentially a matter of first determining the path loss to be expected over a particular route under the worst conditions and then determining a combination of transmitter powers, receiver band-widths, receiver noise figures, and antenna gains that will lead to acceptable performance.—*Reprinted from the February, 1956 issue of the "Bell Laboratories Record."*

EDITOR'S NOTE: In answer to the requests of many readers we have reprinted L. A. Hodson's articles on "The Independent Company and Nationwide Toll Dialing." A booklet containing the entire series (six sections) will be available June 10. Cost of the booklet will be 75¢ per copy. Send orders direct to Readers' Service Dept., Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.

THE AUTHOR

HARVEY N. MISENHEIMER received his B.S. degree from Coe College in 1925, after service in the Navy in World War I and two years in the Merchant Marine as a radio operator. His M.S. degree was received from New York University in 1935. He joined the Department of Development and Research at the A.T.&T. Co. in 1925, where he took part in the early development of overseas radio transmitters and systems. This work continued after his transfer to the Bell Laboratories in 1934. Mr. Misenheimer was on military leave with the Army from 1941 through 1945 and is now a Colonel in the Signal Corps reserve. Upon returning to the Laboratories, he resumed work on overseas radio problems for a time. More recently he has been engaged in cost and performance studies of radio relay systems.

"Public Talks"

(Continued From Page 45)

Screen sizes vary from the living-room type of about 30-by-40 inches to a huge type for auditorium use of about 9 by 12 feet. There are several intermediate sizes, such as 45 by 60 inches. Screen surfaces are usually either glass-beaded or aluminized. The glass-beaded type diffuses the light more than the aluminized type but the latter generally reflects color films more effectively, although scratches and other marks on well-used films will be more noticeable on the latter type of screen.

Extra lengths of extension cord should always be included in the motion picture projector kit because, although schools and other places where you might show film usually have extension cords, it is faster and more convenient if you can supply your own.

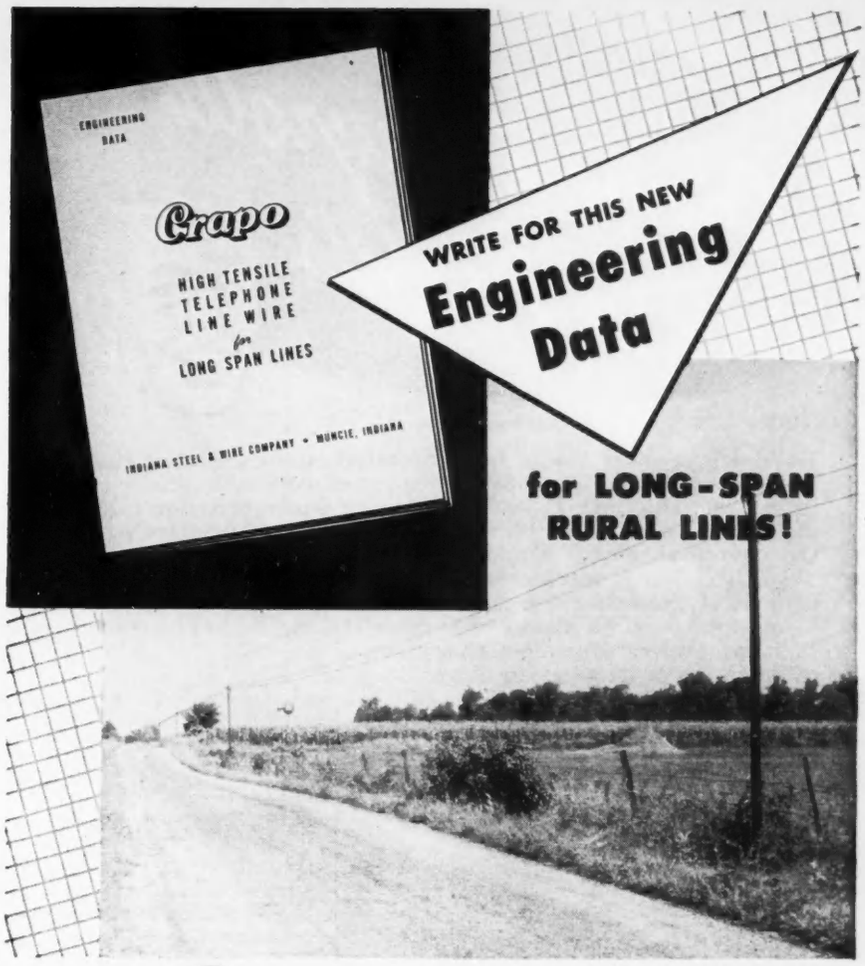
The operator of the projector should be someone who is familiar with the equipment. There may be many persons interested in running the projector (or giving limitless advice on why the film "flips" and what should be done to correct it), but it is a good practice to entrust this expensive equipment to qualified hands.

We always try to show a film on dial telephone usage to high school pupils the day before a dial conversion in that community. In some schools, where visual aids play an important part and where the school has its own projection equipment and an appointed student to operate it, we allow the student to show our film.

We have found high school and junior high students very attentitive audiences and frequently besiege us with serious questions on the use, makeup, and history of the telephone. We feel that no talk or equipment demonstration or film showing before these future citizens is ever wasted time. Such contacts also serve as excellent recruiting drives among high school girls who are potential operators and high school boys, who are interested in how the telephone and other electrical devices operate.

Our experience has shown that there are definte points to remember in conducting a film program before high school students:

(1) Don't "talk down" to them. They feel they are almost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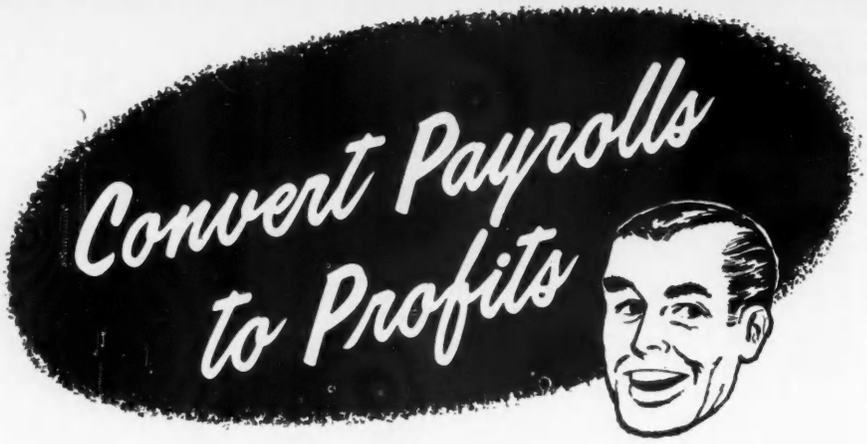
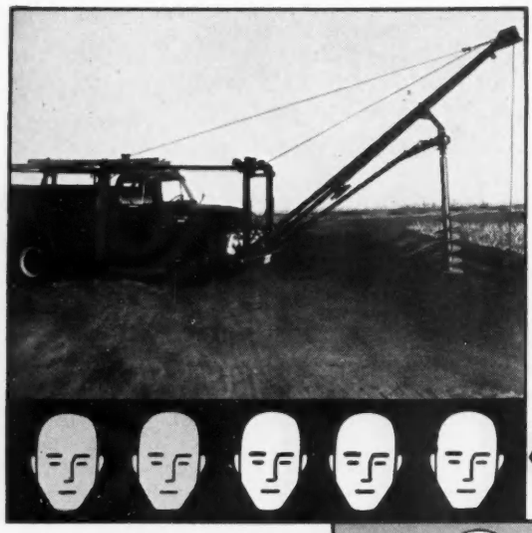


Tel-E-Lect's complete line of front operated equipment now enables utility companies to do twice the amount of work with smaller crews in just half the time. If you're still using 5-man crews on obsolete utility equipment (even on a new chassis), you have extra men on the payroll that can be making a profit for you on another job. Tel-E-Lect builds the services of three men into its utility truck equipment. Now, *two men* can do the work once done by five!

Adaptable to all makes of popular trucks, Tel-E-Lect quality-built front operated equipment is fast and versatile. The simplicity of operation of its winches, digger drive kits, FLD units, derricks, diggers and augers make them efficient and economical—require smaller crews to operate, thus freeing men for other jobs and for big, highline work.

After just *two minutes* on location, the digger and derrick are ready to go to work. Digger and derrick equipment are brought into working position by simply engaging winch line. The digger remains attached to the derrick and is raised or lowered by actuating a single lever in the cab. The load line is now available for pole setting. When digging in hard soil or frozen ground, the weight of the pole may be used as ballast for additional auger pressure.



Tel-E-Lect equipment saves three men out of five for other work.

These men are now available for other important jobs!

Compact, custom-built bodies and utility equipment by Tel-E-Lect are capable of handling the major portion of Telephone and Power Co. work. This unit is shown with derrick and digger stowed overhead for travel.

Write for literature on Front Operated Equipment

TEL-E-LECT PRODUCTS, INC.
100,13 Minnetonka Blvd.
Minneapolis 26, Minnesota

adults and want to be treated as adults. Don't get too technical, though. Say "switchboard" but not "PBX," and say "long distance" not "toll."

(2) Have the projector, speaker, and screen all set up before the pupils enter the room or auditorium. Nothing makes the student body more restless than to have to wait for a "show" to start.

(3) Ask them if they have any questions. They will.

(4) Stir their interest in the telephone industry as a career. Point up the glamour and variety of telephone work (after all, if YOU didn't think it was interesting, YOU wouldn't be in it!)

In addition to films, equipment demonstrations or just plain talks, you can impart the telephone story to high schoolers by passing out pamphlets, booklets, brochures, or whatever non-technical printed material you have in sufficient quantities. Teen-agers love free samples and will generally carry such souvenirs home to show their parents. Don't leave the the booklets in a pile for them to pick up on their way out. Have someone pass them out before your film or talk begins.

Motion pictures are generally better than slides in both teen-age and adult meetings because of the comparative rarity of slides in any of the common forms of entertainment. Teen-agers and their folks have been conditioned to expect motion through movies and television. If there is a choice between a black and white film or a color film, take the color film, unless the black and white film is obviously superior in some other respects.

If a meeting with adults of a specific interest (an engineering society, for example) is planned, then 35-millimeter slides of your equipment or buildings may be helpful to point out technical phases of telephone work.

Equipment Demonstrations

DEMONSTRATIONS of telephone equipment are helpful in public appearances, before adult and high school groups if the equipment is easily explainable, actually DOES something, and, best of all, can be examined or operated at close range by members of the audience either

With T-C in the picture you get . . .

THE BEST IN PRESERVATION

SPECIFY T-C PRESSURE TREATED POLES

PUT T-C IN YOUR POLE PICTURE . . . THEN REST ASSURED YOU HAVE POLES WITH THE BEST IN PRESERVATION. HERE'S WHY, EVERY STEP IN T-C PRODUCTION IS SUBJECT TO PRECISE CONTROL. THESE CONTROLS COVER TIMBER SELECTION AND MANUFACTURE AS WELL AS MOISTURE REMOVAL AND TREATMENT. DEVELOPED AND REFINED DURING T-C'S 30 YEAR HISTORY, THESE CONTROLS INSURE YOU UNIFORM HIGH QUALITY AND CONSEQUENT MAXIMUM LONG LIFE.

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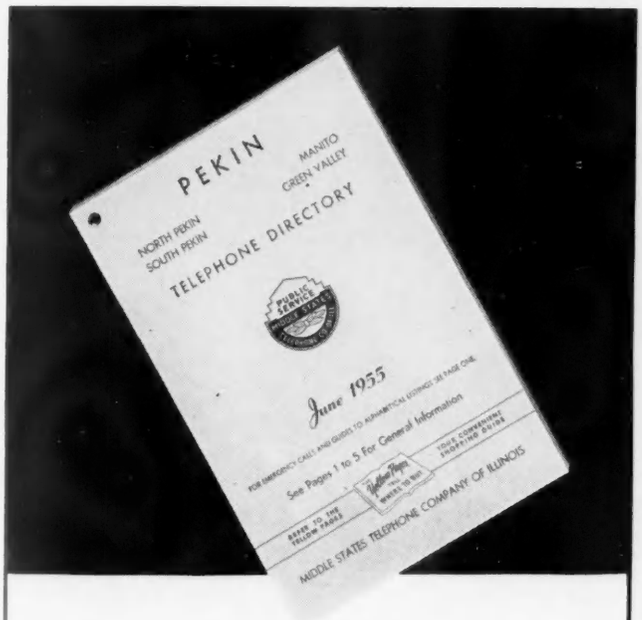
and LEIGH SALES CORP.

TAYLOR - COLQUITT CO.
SPARTANBURG, SOUTH CAROLINA

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA



A directory for the
Middle States Telephone Company of Illinois
printed by

R. R. DONNELLEY & SONS COMPANY

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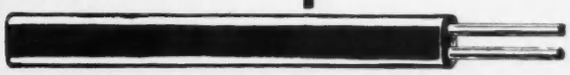


NEW Oval Twin Construction INSULATED PARALLEL LINE WIRE

AVAILABLE IN 3 TYPES OF CONDUCTORS
- No. 14 AWG Copperweld
- No. 12 AWG Copperweld
- .083 Galvanized Steel

- REPLACE OPEN WIRE RUN CONSTRUCTION
- USE FOR LONG-SPAN SERVICE WIRE DROPS
- CUT COST—SAVE TIME

Here at last! High strength construction with 2 parallel conductors encased in a highly weather-resistant black Polyethylene insulation. Gives greater and longer service than open wire. Cuts costs to a minimum. It's NEW! It's "HOT"! It's available now at Buckeye!

Send for Circular 356

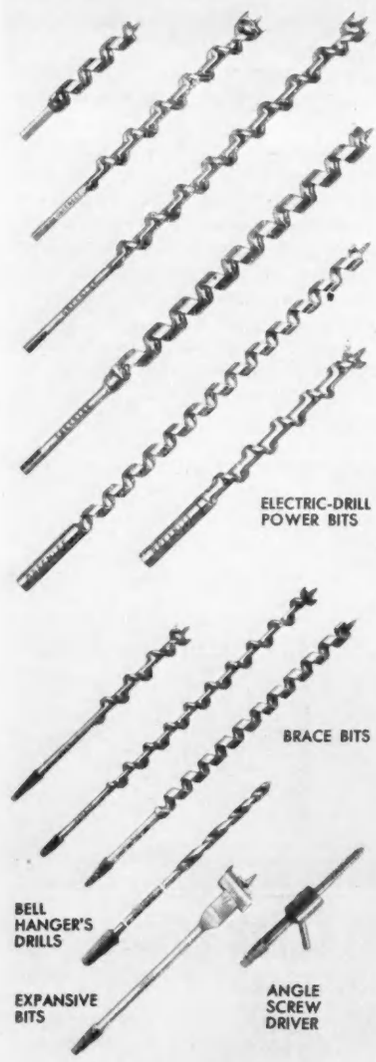
BUCKEYE TELEPHONE & SUPPLY CO.

1250 Kinnear Rd. Columbus 21, Ohio

high-quality, long-lived

BORING TOOLS

for pole, crossarm, and timber work . . .



TOOLS FOR CRAFTSMEN

GREENLEE

Whether you need to bore deep or shallow holes, small or large, there is a GREENLEE bit, drill, or auger for the job! Various lengths and styles for electric drill or hand-brace use. All of highest quality materials and correct design for easy boring, clean cutting, and long life under hard usage. Stocked by leading telephone supply distributors . . . see yours or write direct for literature.

Greenlee Tool Co., 2006 Columbia Ave., Rockford, Ill.

during or after the demonstration talk.

Last year we demonstrated a loud-speaking telephone to the Lafayette Lions Club after one of our representatives, himself a member of the Lions Club, had talked on some of the innovations in the telephone industry and on how the telephone has come to play such an important part in our nation's welfare and economy. Few of the club members had ever heard of such a telephonic device and none of them, as we learned from a show of hands, had ever seen the loud-speaking telephone in operation.

The no-hands instrument was mounted near the speaker's table and we had asked the president of our company to be ready for a call at his home that evening. One of the club members dialed our president's number and the entire group heard the ensuing conversation. (Several club members commented later on their interest in the instrument for possible installation in their offices.)

Another possibility in equipment demonstration is the colored handset and cordless switchboard. The public meeting on the night before a dial conversion is an excellent time for displaying colored telephones and, if possible, allowing members of the audience to dial from one instrument to another. This familiarizes the public with the use of the dial telephone and at the same time whets their interest in colored handsets.

Demonstration of the cordless switchboard can be conducted before high school groups, service and civic clubs, or any group hearing a talk which includes mention of telephone progress.

In May of this year the Education Committee of the Greater Lafayette Chamber of Commerce asked our company to present a student convocation program at the two high schools. Purpose of the over-all program is to show how different industries contribute to the welfare and economy of the city and state. Our company was represented on a panel discussion by members of our plant, commercial, and accounting departments, and Indiana Bell, which operates toll service in and out of Lafayette, sent its chief operator to explain the highlights of the traffic department.

Included on this high school program were a display of colored handsets and a cordless switchboard which the students examined with great in-

Let even the smallest and youngest try out telephone equipment if someone is nearby to give them a hand. It's always a thrill for the kids and it makes a good picture for the local newspaper, too. This young lady operated the dial telephone like an old pro, then showed her grandfather how to do it.

terest after the question-answer period.

Service & Civic Clubs

BUSINESS and professional women's clubs are always interested in programs on telephony. Secretaries and PBX operators carry the telephone story back to their bosses who may be looking for ways to improve their office telephone practices and equipment. It is of definite value to have your chief operator or an operator in one of these clubs. Undoubtedly the best known type of telephone worker to the general public is the cheerful, helpful operator. Some of the experiences of these fine women in our industry make good listening for any group, young or old. A few informal chats with some of your older operators will yield a gold mine of material for future talks wherein human interest anecdotes can be used.

Approaching the various local service and civic clubs with the suggestion that they might like a talk on telephony is a matter which should be treated with tact. Program chairmen, often eager to accept such proposals, are nevertheless wary of any organization which wants to put on a program merely to stimulate sales of its own products or service.

For this reason our company has asked our division managers and district commercial managers to maintain cordial relationships with club program chairmen and other club officials without being persistent or aggressive about it. As long as the clubs know our personnel is ready, willing and able to present a program, that is all we ask. Hounding a program chairman on the matter will raise a barrier of resistance and might hurt the chances of being invited.

At all public meetings our representatives try to spread the feeling that the public is welcome, in groups or singly, to tour our exchange buildings and see for themselves how the telephone company operates. Naturally there arise a few questions at each meeting which cannot be fully answered at the precise moment but which could be answered by a personal visit to our business office. We ask the questioner to visit our business office whenever and as often as he wishes. Public relations is contact with the public and we feel that it cannot be overdone.

One of the main reasons for asking some questioner to visit our busi-

thousands of

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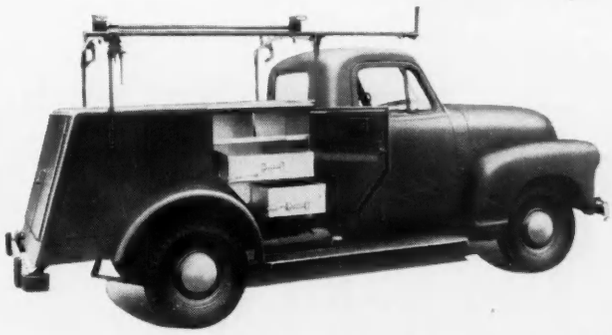
MODEL 20IU76'S

earn extra dollars every day!

Illustrating latest type ladder bracket and adjustable partitioned drawers. Large interior provides a compact and orderly storeroom for materials and tools.

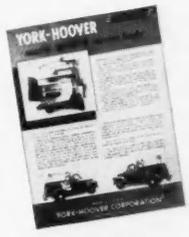


Right side view showing extra large material and tool drawers. Convenient location facilitates quick inventory for everyday service work.

QUICKER, MORE EFFICIENT SERVICE

This Model 20IU76 Service Body will provide many years of dollar-saving service for you. First, because compact design and lightweight, yet rugged, construction, combine to facilitate quicker, more efficient, service work. Second, because the Model 20IU76 Service Body is built by York-Hoover . . . a famous name in the transportation industry since 1892. Write for complete information today!

YORK-HOOVER MODEL 20IU76 SERVICE BODIES ARE EASY TO OBTAIN REGARDLESS OF YOUR LOCATION

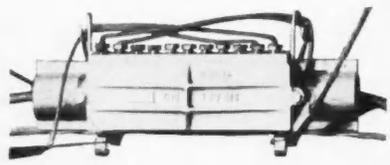


GET THE FACTS! Write for Bulletin 937 today.

YORK-HOOVER
PUBLIC UTILITY BODIES

YORK-HOOVER CORPORATION
BODY DIVISION
YORK, PENNSYLVANIA

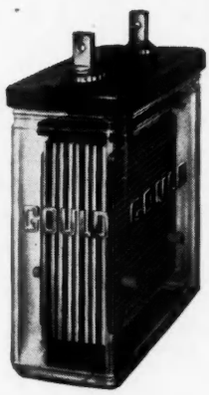
There's a Kellogg Warehouse near you.



NT30 Neal Terminal designed for easy installation by regular maintenance man. No splicing or wire cutting necessary. No joints to wipe or seams to float. Same terminal may be used over and over again. Vulcanized rubber seals cable sheath and terminal shell. CABLE SPINNING EQUIPMENT COMPANY.

Distribution Wire — Extend service economically and quickly by installing 3, 6, 11, or 16 pair Distribution Wire. Polyethylene insulation, color-coded with polyvinyl chloride covering over each conductor. Self-supporting. WHITNEY BLAKE COMPANY.

Versatile Plastic Screw Anchor meets needs of telephone industry. For use in all materials from plasterboard to concrete, indoors and out. Nine sizes for screw sizes 5 through 20 and ¼″ through ½″ Lag Screws. Bonding and fusing action. No special tools required. Savings up to 70%. HOLUB INDUSTRIES, INC.



Outstanding Battery Performance is yours when you choose Gould Plante Batteries. Thick, grooved pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., the finest money can buy.

Seven Kellogg warehouses and over 100 Kellogg distribution points from coast to coast assure you savings in shipping costs and fast delivery. You get the benefit of Kellogg's selection of top quality line supplies, too.

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KELLOGG SWITCHBOARD AND SUPPLY COMPANY
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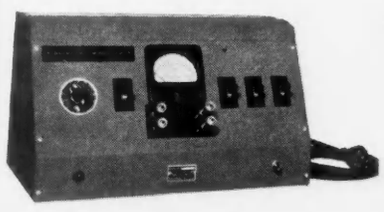
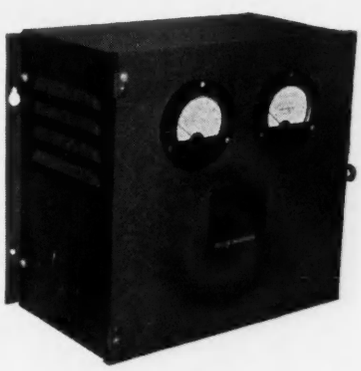
Mobile Power Unit for use by telephone cable splicing crews, for lighting, operating solder pots, solder irons, and electric blowers for ventilating manholes, with a centrifugal or diaphragm pump to keep manholes dry. S&G MANUFACTURING CORP.

Simple, Quick and Sure! — For splicing two wires of different sizes, there's nothing simpler than using Nicopress reducing sleeves and the Nicopress 31-DC tool. Splices are always tight and strong. Made by the NATIONAL TELEPHONE SUPPLY COMPANY.



Shallcross # 692-A Transmission Test Set
Provides a convenient and an inexpensive means of measuring transmission line losses in 600 ohm lines; switchboard circuits, and other equipment. Measures comparative capacitance of condensers and tests the balance of repeating coils and relays. SHALLCROSS MFG. CO.



First Choice of Telephone Industry!
The Raytheon RectiCharger is fully automatic, maintains constant output voltage regardless of variation of load and line voltage. Never overcharged or undercharged, batteries last longer. RAYTHEON MFG. COMPANY.

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ROAD SIGNS

Automatic Type Tripod standard can be set up instantly. Will not blow over. Folds in a flash for compact carrying. Sturdy construction. 4 ft. Automatic Type (illustrated) has locking cam for tripod legs, and 18" x 18" metal sign.
Sample stock wordings:
"DANGER, MEN WORKING"
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"MEN WORKING ABOVE"
Write for Catalog No. 36

NOW AVAILABLE

Bartlett tree paint for application to tree wounds.

Also Pruning Saws.

TRADE MARK COMPOUND

BARTLETT MFG. CO.
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Scru- Tite anchors

are not affected by atmospheric conditions. No corrosion or deterioration. Cold flows. A fraction of the weight of metal anchors. Drill hole, then hammer it home. A new line of expansion anchors available soon. Write for information.
Available in 10 sizes, and in several assorted lengths. Millions in use.
Immediate delivery on all standard screw size anchors.

Underwriter's Laboratory Approved

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ness office is to prevent taking up an excessive amount of time at a public meeting in an attempt to solve a problem which may affect only one subscriber. An even better approach, of course, is to ask the questioner to see you after the meeting when you can give him all the time he wants.

Companion industries in your community can often help you set up an effective public appearance program. A Lafayette public relations director asked us recently, "Do you do any public talks before community clubs, Farm Bureau groups, and service clubs?" He added that farm groups and civic clubs in neighboring small towns were constantly asking him for speakers to enliven a specific occasion.

We volunteered our services whenever he found he could not attend himself. We chose as the non-business topic for our talks the bicycle-car-train tour of Europe we made several years ago. Our colored slides, while not of professional caliber, nevertheless seemed to fill the bill in entertaining Hoosiers who "have always wanted to go to Europe."

The point is that, even though you do not talk telephony, you can create good will for your company by accepting invitations from clubs to talk on other matters. After all, you will be introduced as Mr. So-and-So from So-and-So Telephone Company and even that little bit is good public relations. Acceptance of invitations to appear before groups is a sign that you actually take the community's welfare to heart. People appreciate that. We know because they have told us so.

Handout Material

THEN THERE is the matter of handout material. If you have booklets on telephony or on your company, book matches with your company's name on them, plastic dialing gadgets, and similar give-aways, always check with the program chairman or the president of the club before you even put the giveaways in your car to go to the luncheon or dinner. The club may have a rule against any handouts. Or the club may want you to save the giveaways until an event such as "Advertising Night" which many service clubs conduct once a year when every member can bring advertising material on his own company to distribute to every other member of the organization.

We have had good luck with several kinds of giveaways; pocket-size personal telephone directories (for jotting down most frequently called numbers); book matches; cartoon-illustrated booklets on proper telephone manners; and, in 1955, an amply-illustrated anniversary booklet in three colors depicting the beginning, growth, and aims of our company.

Two giveaway items are sufficient at each public appearance. There should be at least one person (two, if the crowd exceeds 50 or 60) assigned to the job of distributing the giveaways. The matter of assistance is also important in showing films. The main speaker should have someone at the projector who is ready to start the film as soon as the speaker has finished his introductory remarks.

Arrangements must also be made beforehand on the matter of turning out the lights. We have conducted many evening meetings in high school gymnasiums and auditoriums where one of our representatives helped the janitor or other school official with the manipulation of the lights. It is advisable to know in advance, if possible, the lighting arrangement as well as the seating facilities.

At one of our dial conversions this year, for example, the district commercial manager, contrary to custom, asked that the public meeting be held on TWO consecutive nights prior to the actual cutover. He had found, by asking around the community, that interest in the public meeting was running high and that the building to be used, while new and well-suited for our purposes, had an assembly room which would not hold more than half the citizens who indicated they would attend.

The two-night meeting was scheduled and proved to be justified. One hundred and twenty persons attended the first night and about 80 the second night. If extra chairs had not been brought in the first night, there would have been "Standing Room Only." And we have found that many of our most interested listeners are elderly people who would not have stayed if there had been no chairs for them.

We try to remember at all times that when our company representatives talk before groups of the public, they ARE the telephone company to the onlookers. We caution our

speakers that when they open their mouth, they are, as far as the audience is concerned, the absolute symbol of our company. We urge our speakers to be completely sure of their facts and figures and never to make promises other than the normal vow that "We are doing the best we can to give you the best possible telephone service at the lowest possible cost."

We find that public appearances by company personnel occasionally allow subscribers to blow off steam if they are irritated and we feel that this is beneficial because it brings the customer's problem into our hands where we can do something about it. Our public speakers, from whatever department they may be, are urged never to argue with subscribers, particularly at a public gathering, but to listen to the other side until the other side has finished. The best verbal counterpunch is to reply, "We'll certainly look into the matter right away and see what we can do about it."

Although all of us in the telephone industry are proud of the service we render and although we know we are in one of the most interesting businesses in the world, we are apt to neglect the importance of letting the public in on it all. Public appearances before all kinds of groups is an excellent way to transmit some of this pride of service and some of the fascinating phases of our work. We can, with subtlety and with certainty, spread the sales story, the recruiting story, the stock-on-the-market story, in fact every phase of our work which we wish to promote by the simple expedient of getting up in front of people and talking about the telephone industry and our company.

One might categorize the process this way: (1) Stimulation, (2) Invitation, (3) Preparation, and (4) Oration. Except that your "oration" should be a simple worded, friendly talk unmixed with vague promises and unflavored with outright sales promotion.

The public, would rather be entertained than informed. But you can do both, and boost the prestige of your company AND the telephone industry, if you remember that the public talks are good business and good talks are public business.—*Bill Brooks.*

Editor's Note:—The July issue of "Telephone Engineer & Management" will feature another article written by Mr. Brooks.

Here's the PITCH
for faster, more economical anchoring
CHANCE BLACKFOOT ANCHORS
Can be installed by machine to cut line construction costs
Here's a screw anchor that goes down fast and easy whether your line crews install it by hand or by machine. A king-size thimbleye on the Chance Blackfoot will accommodate a big turning bar for easy hand installation. And when you machine-install a Chance Blackfoot Anchor, you reduce installation time to a minimum—which means a big savings in time and money!
What about holding power? Dynamometer tests on a Chance 15 inch Blackfoot Screw Anchor showed no creep at 22,000 pounds!
SMALLER HUB
Smaller hubs on Chance Screw Anchors mean less friction—easier installation. Less earth is disturbed during installation. That's why the Blackfoot has greater holding power.
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This accurately pitched, fast cutting blade really goes down fast. Every size anchor is individually "pitch controlled."
Man! that anchor comes down fast!
"ANCHORING" is the most complete guide to anchoring and guying ever developed. It shows how to choose the right anchor for every job—and how to install it right. Send for your copy!
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- These two
- Pennies for power
- New small insulator
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- Profitable noise
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Published every month to help you get the most out of your materials and supplies dollar

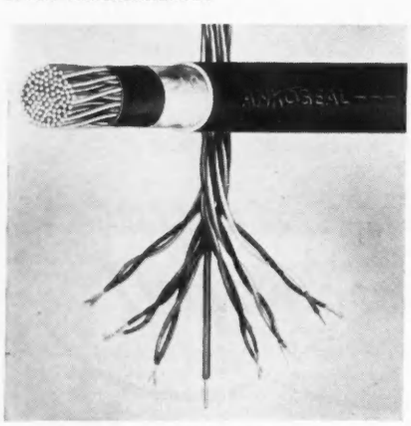
by C. J. Reynolds, Stromberg-Carlson Company

Two dividends are yours when you order supplies from Stromberg-Carlson. First, you get the protection of a double guarantee—ours and the maker's. This assures you of getting the finest products, backed by our 62-year reputation. Second, your support is used to further the art of telephony. We're knee-deep in this industry as a full-time job, not a side line, and your supply business plays a big part and helps us continue our research for new and better telephone equipment.

Choose from these 2 self-supporting cables

Yes, you **do** have a choice in self-supporting cables!

For standard exchange uses, you can get lots of service with the impervious, long-life PVC shield and jacket of Ankoseal type 775-P-SS. It's designed especially for permanent installations.

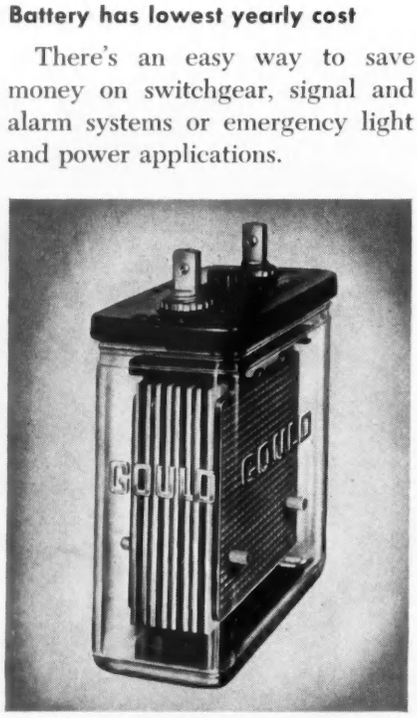


Exchange cable (top) and rural distribution wire are both easy to install.

And for temporary service, you can't beat the speed and low-cost installation of Ankoseal Rural Distribution Wire. Individual color-coded conductors, insulated with polyethylene with a PVC covering, are cabled around an insulated extra high strength galvanized steel support wire.

Battery has lowest yearly cost

There's an easy way to save money on switchgear, signal and alarm systems or emergency light and power applications.



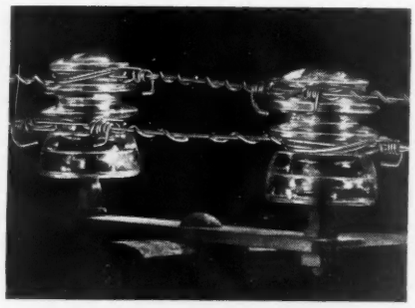
Gould Planté rolls up excellent service records—cuts maintenance to a minimum.

Amazing service records have proved that Gould Planté batteries have the lowest yearly cost of any battery you can use. Pure lead positive plates help make this possible.

Smaller, lighter insulator for point transposition

Here's the answer to your demand for a small, light insulator for point transposition.

Weighing almost 25% less than its predecessor, the Hemingray Number 56 insulator has several important advantages. It's grooved just right to hold wire firmly. It's small and easy to install. Requires no special hardware, and goes on standard pins.



You'll get years of reliable service from each Hemingray insulator, because they are unaffected by sudden or seasonal temperature changes, do not age or deteriorate. All surfaces are, of course, impervious to moisture.

What's cooking?

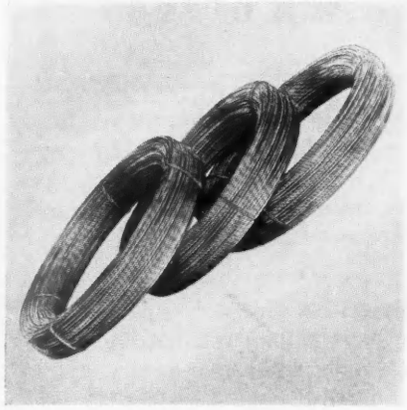
Cross-arms! You get longer life out of them after they've been preservative treated in oil.

One hour at 220°F. in Penta-oil solution is typical pressure treatment for fir arms. Up to 2½ hours on pine. But it adds years to the life of that arm for only pennies additional cost to you.

Or maybe you prefer creosote—pressure or dip treated. American Cross-Arm, Inc. will provide your needs.

Save 10-15 poles per mile

A net saving of 10 to 15 or more pole structures per mile is possible where **Crapo** High-Tensile Telephone Line Wire is used in long-span construction. Fewer pole structures mean substantial savings in time, labor and material, and in maintenance.



Crapo HTL-135 makes possible spans of 350 feet in heavy, 450 feet in medium, and 500 feet in light loading areas. Its practical economy should be considered for new extensions and where old lines are to be replaced.

Crapo HTL-85 (No. 12 B. W. G.) permits spans of 225 feet in heavy, 325 feet in medium, and 375 feet in light loading districts; provides stronger spans on existing pole structures. Both wires possess superior telephonic transmission qualities.

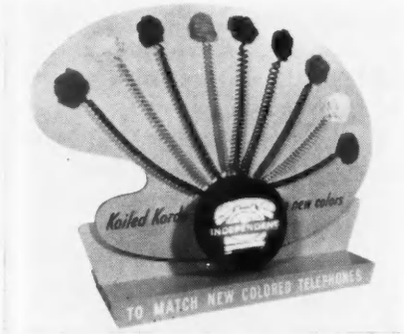
Retractile cords now in black or color

There's extra revenue in Koiled Kords* retractile cords—the spring-like telephone cords that curl up neatly instead of dangling noose-like from the telephone.

Neoprene jacketed, they fit all types and makes of telephones, and last indefinitely under severe service conditions. Extend to about 5 times their retracted length and return to their original neat coil when released.

Tinsel conductors provide maximum flexibility.

Neoprene outer jacket is smooth, clean, attractive, reduces cord trouble to a minimum.



Available in black or color.

Distribution wire needs no cross arms

There are several reasons you can enjoy lower installing costs with this Whitney Blake multi-pair distribution wire.

Because it's self-supporting, it needs no cross arms. And it's easy to string because it's lightweight and comes in long lengths—up to 4000 feet per reel.

Self-supporting distribution wire has built-in messenger.

This wire has excellent electrical characteristics: low-loss transmission, low capacitance, high dielectric strength.

Its polyethylene insulation provides excellent weather resistance.

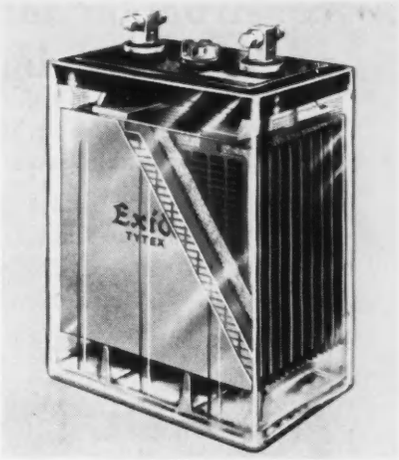
The wire is available with 6, 11 or 16 pairs of conductors. Each conductor is protected by a polyvinyl chloride covering.

Taper-less battery saves space

How would you like to pack more power in less floor space?

The essential feature of the Exide Tytex Battery is the manner in which the element is held together in a strong compact unit. This feature has been achieved by assembling its element in a molded glass jar having no taper in its vertical sides . . . thus more power in less space.

Among other features of the battery are the balanced positive and



Exide Tytex Battery has vertical sides.

negative plate design which, together with the use of Mipor separators and Vitrex retainers, contribute to long battery life, less weight per ampere hour output and more attractive looking cells which improve the appearance of the installations.

Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in a spot as noisy as a boiler factory! It costs the subscriber **less** than a

booth—and you get the revenue! Ask us for complete details.

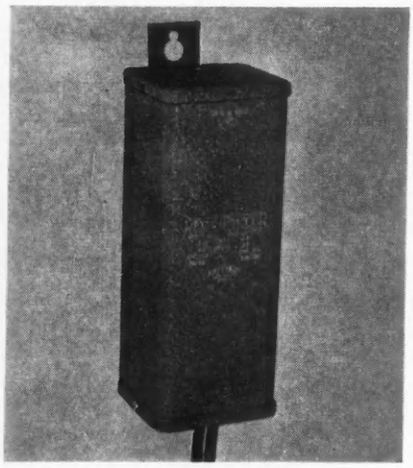
Continued on page 100

(Continued from page 99)

construction and maintenance digest

Keep your PBX customers happy with this dependable power unit

A steady, economical supply of DC power is one of the things you need for an efficient PBX—and a happy PBX customer. Here's how to provide that better service, with big savings.



Money-saving RectiFilteR®.
"Just plug it in and forget it!"

For more than two decades, leading independent telephone companies have found that Raytheon RectiFilteRs are the most economical and efficient way to supply steady DC power to PBX boards directly from an AC source.

With no moving parts, the Raytheon RectiFilteR requires neither adjustment nor maintenance. It will outlast many sets of batteries, release wires carrying charging current from central office to subscribers' PBX boards for revenue producing service, and minimize power cost because of high efficiency in converting from AC to DC.

Dry disc rectifying units and other components are designed for long-life, trouble-free service. The Raytheon RectiFilteR will end your telephone power problems. Just plug it in, close the door—and forget it!

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To obtain copies of literature reviewed by this department, write Readers' Service, 7720 N. Sheridan Road, Chicago 26, Ill.

Aerial Ladder

A NEW TECHNICAL catalog on the Series 2200 Ladder has been released by J. H. Holan Corp. The 4-page, 2-color catalog uses line art to show various safety and operating features: the new band-type brake, ladder hooks duo-level platform, center spring counterbalancing and others. The back page has a chart showing ground-to-platform heights for elevations from 12° to 72°.

* * * *

Diggers

HOW TO DIG HOLES easily and rapidly is the subject of a new catalog on the Holan 4401-H Portable Hydraulic Earth Borer. The 4-page catalog from J. H. Holan Corp., has line sketches, close-up views of construction and action photos of the new Holan digger. The unit bores holes 8 to 20 inches in diameter and up to 8 feet deep. A variety of cutter heads is available.

* * * *

Raceways

NATIONAL ELECTRIC PRODUCTS CORP. has printed a new catalog (No. 445) on its 4x4 and 6x6 "Wirewa" metal raceways. Both sizes, which come in standard sized sections for housing electric wires and cables, are featured in the catalog. The hinged lid feature of the duct permits access to the wires and cables at all points throughout the system for tapping, splicing, or other changes without disturbing existing work.

The systems are approved for use in the installation of feeders, branch circuits, control and signal wiring, as well as in extensions of armored cable, flexible metal and rigid conduits, electrical metallic tubing, and surface metal raceways.

* * * *

Safety Hoist Hook

A NEW FOUR-PAGE catalog from E. D. Bullard Co. covers new styles of Bullard-Burnham Safety Hooks available. It contains photographs of hooks and connecters, each accompanied by a full explanation of their uses on Hoists and Cranes. The data covers types "A" to type "S" for hooks ranging from the No. 1 with a safe working load of 1000 pounds, through No. 16A with a safe working load of 50,000 pounds and utility hooks for use with "Hot Line Tools" and equipment. In addition to this can be found the safe working load of all B-B Safety Hooks, throat opening, shank diameter, shank remaining above the gate and the bail or eye nut size.

Other data recently made available is an 8-page brochure covering technical information on sizes and types of B-B Hooks needed for many of the popular models of hoists and pullers, and pull test reports giving actual tensile strengths of Bullard-Burnham Safety Hooks with bail.

* * * *

Trucks

FULL INFORMATION on International six-wheel trucks — both conventional and cab-over-engine models — is contained in a new 24-page catalog (form CR-8600-E) now made available by the motor truck division of International Harvester Co.

Full color and two color treatment is employed throughout the book to present design and operating features of the line, which includes S-line, R-line, and CO models, powered by gasoline, diesel, or LPG engines.

Kellogg Transfers Asa To Kansas City, Mo.

W. R. (BILL) Asa, former estimator with the switchboard sales department of Kellogg Switchboard & Supply Co., Chicago, has been transferred to the Western Division as sales representative for the states of Kansas and Colorado. He reports to R. W. Engsberg, division manager, Kansas City, Mo.

North Names Wilson Director of Advertising

APPOINTMENT of William D. Wilson as director of advertising, North Electric Co., Galion, Ohio, was announced last month by E. W. Gray, assistant to the president.

The assignment takes Wilson from Akron, Ohio, where he had operated his own advertising agency since

WILLIAM D. WILSON

July 1952. Prior to that Wilson spent 7½ years in the advertising department of the B. F. Goodrich Co.

Wilson will direct the advertising, sales promotion and public relations activities of both the Telephone and Industrial Divisions of the 72 year old manufacturer of telephone and automatic-electronic control systems and components.

Two New Officers Elected By Whitney Blake Co.

LAST MONTH Whitney Blake Co., New Haven, Conn., announced the election of J. Marshall Taylor as vice president in charge of sales, and the election of Mrs. Rachel L. Duffy as treasurer.

At the same time the company confirmed the appointment of Robert A.

at Delta Telephone and Telegraph Co.

It's C&D Calcium Batteries for EXTRA life

One of C&D's typical installations in use at the Delta Telephone and Telegraph Co., Courtland, Calif. The 24 PlastiCal (lead-calcium) cells, Type PCE-420, have a 420 A.H. capacity.

In the growing community of Courtland, California, the Delta Telephone and Telegraph Co. relies on the continuous, dependable service provided by C&D PlastiCal batteries. For here, in the historic Delta region, the Delta Telephone and Telegraph Co. has found that C&D has the answer to telephone battery needs.

When you order your next telephone battery, specify C&D. For with C&D, you get:

1. **One-piece, permanently-sealed plastic case. Entire unit is shock-resistant, lighter, and more compact than glass or rubber.**
2. **Exclusive suspended and supported plate construction eliminates leaks due to internal stresses.**
3. **Easier maintenance, because patented Post Seal eliminates acid creepage.**
4. **Lower shipping costs. Light plastic case reduces total in-place cost.**

You can order C&D batteries from your equipment supplier.

Write for bulletins!

For details and specifications on C&D telephone batteries, write for Bulletins T-527 and T-528.

C&D

BATTERIES, INC.

of Conshohocken, Pa.

Manufacturers of Industrial Batteries since 1908

Sales and Service Offices in Principal Cities from Coast to Coast

coming CONVENTIONS

MAINE, NEW HAMPSHIRE & VERMONT: Farragut Hotel, Rye Beach, N. H., June 19, 20 and 21.

MICHIGAN: — Pantlind Hotel, Grand Rapids, Sept. 6-7.

TENNESSEE: — Hermitage Hotel, Nashville, Sept. 13-14.

ARKANSAS:—Arlington Hotel, Hot Springs, Sept. 17-18.

ROCKY MOUNTAIN: — Utah Hotel, Salt Lake City, Utah, Sept. 20-21.

NORTH CAROLINA:—Carolina Hotel, Pinehurst, Oct. 4 and 5.

USITA: — Conrad Hilton Hotel, Chicago, Oct. 15-16-17.

VIRGINIA—W. VA.:—Roanoke Hotel, Roanoke, Va., Nov. 1 and 2.

S. CAROLINA: — Clemson House, Clemson, Nov. 5-6.

OKLAHOMA: —Huckins Hotel, Oklahoma City, Nov. 7-8.

ALA.—MISS.:—Thomas Jefferson Hotel, Birmingham. Nov. 12-13.

GEORGIA: — Bonair Hotel, Augusta, Nov. 15-17.

FLORIDA: — Daytona Plaza Hotel, Daytona Beach, Nov. 19-20.

TEXAS: Plaza Hotel, San Antonio, Mar. 11-12, 1957.

IOWA: Hotel Fort Des Moines, Des Moines, Apr. 2-3, 1957.

J. MARSHALL TAYLOR

Shields as controller and head of the accounting, cost and payroll departments.

Mr. Taylor attended the Rhode Island State College in Kingston, R. I. and started his career in the wire industry with General Cable Co. in 1929. In 1933 he joined Anaconda Wire & Cable Co. and later Collyer Insulated Wire Co. In 1950 Mr. Taylor became assistant sales manager of Whitney Blake and the following year was promoted to sales manager.

In his new position, Mr. Taylor will have full responsibility for the sales of Whitney Blake products. The company manufactures wire and cable which is largely distributed through the Independent telephone industry, a field in which Mr. Taylor is widely known. He is presently serving on the Advisory Committee of the Wire and Cable Section of the National Electrical Manufacturers Association.

MRS. RACHEL L. DUFFY

Mrs. Duffy joined Whitney Blake in 1940. She came to New Haven from Lima, Ohio, where she was engaged in banking and financial work. Mrs. Duffy first was appointed assistant secretary and in 1950 was made assistant treasurer. Until her recent promotion to treasurer of the company Mrs. Duffy has been in charge of the accounting and payroll departments.

Mr. Shields is a native of New Haven. Previously employed by the Scovell, Wellington, Co., and the New York, New Haven & Hartford Railroad, he joined Whitney Blake in 1948 as a special accountant. He saw service at home and overseas with the U. S. Army Engineers. He is a member of the National Electrical Manufacturers Association - Accounting Committee.

New Alarm System Uses Regular Telephone Circuits

PATENTS ON equipment which will super-impose alarm and synchronization signals over existing telephone circuits without interference with their regular use, have been acquired by Koiled Kords, Inc. A simple transistorized, dry cell battery-powered signal transmitter is installed on the subscriber's premises. When actuated, it transmits a high frequency signal over regular telephone circuits to the central office. Special receiving and amplifying equipment in the central office in turn transmits the signal to a telephone answering service or police station over a regular circuit.

When the subscriber installs any acceptable "trap" or fire alarm system on his premises the signal created by this is received by the transmitter on the premises and in turn passed over the telephone line. Use of this equipment eliminates the necessity for special leased wires now being employed for this type of service and broadens its potential use because of this economy.

It is necessary that telephone companies file special rates covering this "super-imposed" type of service. When such rates are established Koiled Kords, Inc. will be in a position to furnish the necessary equipment to utilize this service.

Satisfactory trial tests of the equipment have been completed in California. Rates, effective December 15, 1955, were established for this serv-

Attending opening of Kellogg's new Atlanta, Ga., warehouse were: Bottom (l. to r.) C. F. CHENEY, A. SVEHLIK, R. W. ENGSBERG, W. G. VANCE, H. McDONALD. Top (l. to r.): W. P. HOLLIS, R. H. SMYTHE, J. M. LINDSAY, J. T. ROBERTSON, K. H. BENNINGHAM, W. F. FLANLEY.

ice and it is now being offered to subscribers in the area by the Electronic Alarm & Signal Co., Inc.

It is expected that many telephone companies will employ equipment of this nature for coin box protection within their own systems prior to establishing rates for leasing lines to operating alarm companies. It is anticipated that small telephone companies may elect to add alarm service themselves and operate the entire system instead of leasing circuits to a separate company.

The types of locations where this service may be used is almost unlimited, banks, supermarkets, department stores, liquor outlets, in fact anywhere a telephone is or can be installed.

John Brown Cook, president, in announcing the entry of Koiled Kords, Inc., into the alarm equipment business states that the company has formed a wholly owned subsidiary called the Electronic Alarm & Signal Co., Inc., Beverly Hills, Calif., as a pilot operation to prove-in the operational features of this new patented equipment.

Officers of the new corporation are John Brown Cook, president, Frank W. Jones, vice president and general manager, Edgar L. Love, vice president, Mrs. Ruth M. James, secretary and treasurer. The above are also directors. C. F. Mason is chairman of the board and Ralph Collins is also a director.

Kellogg Swbd. Opens New Atlanta Warehouse

LAST MONTH Kellogg Switchboard & Supply Co., customers from the Southeastern States participated in the opening of the company's new Atlanta, Ga., Headquarters and Warehouse in the Chattahoochee Industrial District. Present to welcome them were members of the Kellogg Management Advisory Board including President James H. Kellogg and Vice President Claude D. Manning of Chicago. The regular monthly meeting of the Board had been scheduled there in order to allow Kellogg's board members to meet their friends and customers from the Southeast.

The company also used the occasion to hold a sales meeting for its division managers and to play host to its suppliers in the area.

Kellogg's new Atlanta Headquarters at 1594 Southland Circle, N. W., is a new brick building of 10,200 feet

Kellogg Swbd. & Supply Co.'s new Atlanta, Ga., warehouse.

of floor space. In addition to offices for the division manager and staff, the building will provide ample warehousing of supplies for quick service to the company's customers in the area.

Other members at the Board Meeting included: William A. McCracken, vice president; Harry C. McCluskey, retired; George T. Scharffenberger, vice president in charge of operations; John P. Hooker; Loren Berry; Admiral John H. Gingrich, vice president of International Telephone & Telegraph Corp, and S. Ashley Guthrie, partner in Law Firm of Tenney, Sherman, Bentley & Guthrie.

RALPH H. SMYTHE (left), Kellogg's Southeastern Division manager and JAMES H. KELLOGG, company president discuss opening of new warehouse.

Lorain Products Announces New Model B Howler

THE Lorain Products Corp. has announced production of the new Lorain Howler Model B which supersedes Model A. It retains all the desirable features of the old Model and includes several improvements.

The type and quality of the signal tone characteristic of the Model A Howler has been retained in the new design. Also the new Model preserves the slow build-up of signal strength when the Howler is first started in order to prevent an excessively loud signal from being applied to a telephone receiver held to a subscriber's ear.

The Model B Howler incorporates a new control relay which can be operated in series with the subscriber's line so the Howler can be tripped and the line returned to service merely by the replacement of the subscriber's receiver on its hook.

Circuits have been developed for applying the Howler by means of a test shoe or at the test desk. The latter, however, is not part of the Howler. Instructions furnished with the Howler include typical circuits for taking advantage of the new features and will also suggest modifications to meet special requirements.

The new Howler is smaller in size than the Model A: it is housed in a cabinet 8⅞″ high, 8″ wide and 5¾″ deep with mounting centers of 6½″ by 6 15/32″. Its appearance is similar to the Model A, but its shipping weight is ten pounds instead of eighteen pounds.

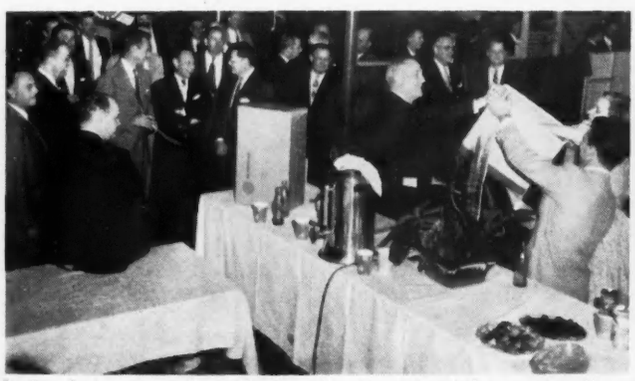
Leich Sells Alphaduct to General Cable Corp.

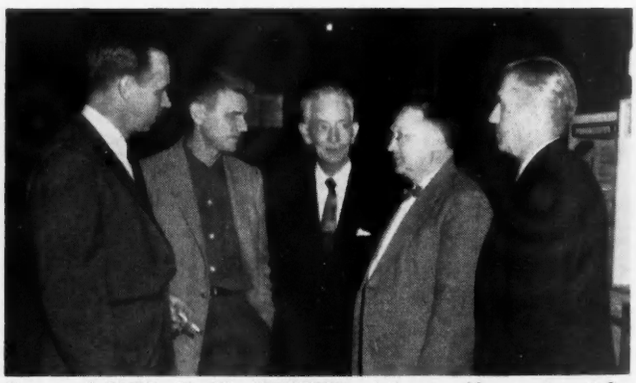
GENERAL Telephone Corp., announced last month that its wholly-owned subsidiary Leich Electric Co., had sold the stock of Alphaduct Wire & Cable Co. to General Cable Corp., in exchange for its Common Stock.

Alphaduct Wire & Cable Co., which was acquired by Leich Electric Co. in 1954, is engaged in the production and distribution of drop and inside wire mainly for the Independent telephone companies. Its plant, which employs approximately 50 people, is located in New Brunswick, N. J.

General Cable Corp., supplier of communication wire and cable to the Independent telephone industry, has for the last 10 years been increasing its capacity and the acquisition by it of Alphaduct Wire & Cable Co. will enable it to provide better service for the entire industry. Its production, research and engineering facilities have and will continue to benefit the approximately 4,800 independent telephone companies located throughout the United States.

General Telephone Corp., also exchanged 166,667 shares of its Common Stock for 250,000 shares of Common Stock of General Cable Corp. Both companies, it was stated, acquired this stock for investment purposes.





Left photo was taken during drawing for "door prizes" at opening of new Kellogg warehouse. Holding box (l. to r.) are: W. P. HOLLIS, Chicago; R. A. SCARLATA, Atlanta, Ga., and MRS. R. H. SMYTHE, Atlanta. Shown in right photo (l. to r.) are:—J. F. ELMEN, JOHN SIMS, D. B. CORMAN, and H. S. POAGE.

G. E. Stephenson Named C & D Representative

GEORGE E. STEPHENSON has been made a representative for C & D Batteries in the Phoenix-El Paso

GEORGE E. STEPHENS

areas. He will work out of the Tonoray Equipment Co., Denver, Colo. agent for C & D.

C & D Batteries' new salesmen has been a manufacturers' representative in Phoenix for the last year. He went into business for himself following ten years' service with Fannin's Gas & Equipment Co., Wickenburg, Ariz.

Harold T. Renne Joins Bell Laboratries

HAROLD S. RENNE, until recently technical editor in the electronics group at Ziff-Davis Publishing Co., has resigned that position to join Bell Telephone Laboratories as technical information supervisor.

In his new post, Mr. Renne will serve the technical and trade press, providing information on Bell Laboratories' research and development activities.

Mr. Renne was graduated from Kalamazoo College with a bachelor of arts degree in physics in 1934 and took his graduate work at Syracuse University leading to a master of science degree in physics in 1938. Following graduation he was employed by Underwriters' Laboratories, Inc., as assistant electrical engineer. In 1942, he joined the Illinois Institute of Technology as an instructor and supervisor in the pre-radar program and in 1943 became a physics instructor on the regular staff. He joined Ziff-Davis Publishing Co., early in 1944, and has been associated with *Radio and Television News* and *Popular Electronics*.

He has been active in the Institute of Radio Engineers, both in Chicago and New York. He is currently Vice Chairman of the New York Section of the I.R.E., and last month was nominated to serve as Chairman for the coming year. He is a member of the A.I.E.E., an associate member of Sigma Xi and a member of Sigma Pi Sigma.

Insto-Gas Moves to New Location

INSTO-GAS CORP. has moved its general offices and main plant to larger facilities at 998 East Woodbridge Ave., Detroit 7, Mich., according to an announcement by A. L. Wiener, president of the corporation.

The new headquarters building for the manufacture of Insto-Gas portable heating equipment is a spacious 3-½ story reinforced concrete building in the Central Detroit manufacturing district. The building provides greatly increased production and shipping facilities, as well as ample space for new executive offices and an enlarged research department.

The building is flanked by a company parking lot on the west and a large storage yard and shipping dock on the east. Ample space is available on the property to meet future expansion needs of the Corporation, according to Mr. Wiener.

Insto-Gas Corporation was founded in 1933 to manufacture an entirely new type of portable heating equipment, using Insto-Gas fuel. Since that time, the original line of torches and furnaces has been greatly expanded to include many other portable heating tools.

Insto-Gas products are now distributed by well over 1000 wholesale jobbers and are generally used throughout the United States and Canada by plumbing, heating, electrical and other building trades as well as for maintenance and general utility uses.

Sloan Fellowship Won By Charles F. Cheney

CHARLES F. CHENEY, Chicago division manager, Kellogg Switchboard & Supply Co., division of International Telephone & Telegraph Corp., has been awarded a coveted Sloan Fellowship for 1956-57, according to Howard W. Johnson,

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DEPT. MX, 1221 N. W. 21st Avenue,
Portland, Ore.

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Telephone Engineer Publishing Corp.
7720 N. Sheridan Rd., Chicago 26, Ill.

director, Massachusetts Institute of Technology.

Established by Alfred P. Sloan, the fellowship provides for participation in a 12-month Executive Development Program at MIT for qualifying industrial executives. Cheney was I. T.-& T.'s candidate for this award.

Cheney joined Kellogg in June 1949 as a sales representative in the New York, Pennsylvania and Ohio territory. In July 1953, he was promoted to the position of manager of the Central Sales Division with his home office and warehouse in Mansfield, Ohio. He became manager of of the Chicago Division in August 1954.

Cheney was graduated from the University of Wisconsin with a degree in Electrical Engineering.

Howard Van Zandt Transfers to Tokyo

HOWARD F. VAN ZANDT, assistant vice president of the International Standard Electric Corp., and former assistant sales manager of the Kellogg Switchboard & Supply Co., has been transferred to Tokyo, Japan, where he will be Far Eastern Representative of the International Standard Electric Corp., a subsidiary of International Telephone & Telegraph Corp.

In his new capacities, Mr. Van Zandt will represent the American and Foreign Manufacturing, and Research and Development divisions of the IT&T, including Kellogg, in the Far Eastern countries. The factories, laboratories, and foreign trading companies of IT&T employ over 80,000 people and include 34 manufacturing and laboratory companies in 19 countries. IT&T is the largest American-owned international enterprise engaged in the development, manufacture, sale and installation of electronic communications equipment, the operation of telecommunications services, and the granting of patent licenses and technical aid in those fields.

In Japan are two associate licensee companies, the Sumitomo Electric Industries, Limited, and the Nippon Electric Co., Ltd., in whose Tokyo headquarters building Mr. Van Zandt's office will be located.

Prior to joining the Kellogg company in 1951, Mr. Van Zandt spent five years as a member of the Civil Communications Section of General MacArthur's Occupation Staff. He

HOWARD VAN ZANDT

advised on the rebuilding and reform of Japan's telephone system during this period. He returned to the United States in 1951 and joined Kellogg on June 1 of that year.

Mr. Van Zandt returned to the Far East on business in 1952, 1953, 1955, and early in 1956. The sale of Kellogg Crossbar and Toll Switchboard equipment at Takasaki, Kuragano, and Annaka was made under his direction. While in Japan in 1952, he spoke formally in the Imperial Diet — in Japanese — an unparalleled experience for an Occidental.

A native of Chicago, Mr. Van Zandt first went to Japan in 1918, where his father was Chief Engineer of the Asano Cement Company. These years spent in Japan with his family enabled him to master the Japanese language.

He returned to the United States, and in 1929 after being graduated from the University of Oklahoma with a Bachelor of Science Degree, joined the Southwestern Bell Telephone Company. He attended the University's graduate school on a part-time basis for four years and was awarded his Master's Degree in History in 1937, specializing in East Asia. During World War II, he taught courses in the Japanese language for the University.

He has written over 100 magazine articles, as well as innumerable newspaper articles, dealing with East Asia, Europe, North Africa, and the United States. He has given over 1,000 lectures, most of them dealing with the Orient, telephony, American Colonies, etc.

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NEW PRODUCTS' SHOWCASE

Safety Wheel Block

A RECENTLY improved Safety Device, marketed by Calumet Steel Castings Corp., Dept. TE&M, Hammond, Ind., is the WB2H "Standard Safety Wheel Block."

By use of stress analysis as well as other engineering and manufacturing techniques, it has now been possible to produce an exceptionally strong, moderate sized, light weight, wheel block adequate for use with heavily loaded vehicles.

New Safety Wheel Block

The WB2H, "Standard Safety Wheel Block," is well designed with rounded edges, stiffening ribs and supporting members, as well as integrally cast gripper teeth. The approximate over-all dimensions are 9x10x 10 and weight is 14 lbs. each. Provision is made for chaining to dock or vehicle.

These blocks are optionally available with owner's name cast on in raised letters when made up for specific orders.

Produced as an Alloy Steel Casting, fully heat treated and finished in traffic yellow protective paint, they will last indefintely protecting your equipment and providing safe working conditions for your personnel.—For complete data, *Check New Product* 954.

Floor Armor

AN ILLUSTRATED BOOKLET describing the uses of steel floor armor to prolong the life of floors has been published.

The new brochure shows the application and installation of "Hexteel" heavy duty floor armor and "Floorsteel" flexible type floor armor through a number of simplified illustrations and engineering data.

"Hexteel" is a steel surface armor designed to take the brunt of rolling loads and to increase the life of industrial floors, ramps, docks, aisles, highway and railroad bridges.

"Floorsteel" is a flexible floor armor which rolls out like a rug. It is ideal for armoring irregular surfaces.

Included in this report are complete detailed specifications for both "Hexteel" and "Floorsteel" and instructions for determining the size armor which should be used for each specific installation.

This pamphlet is made available free of charge to any interested reader.—*Check New Product* 955.

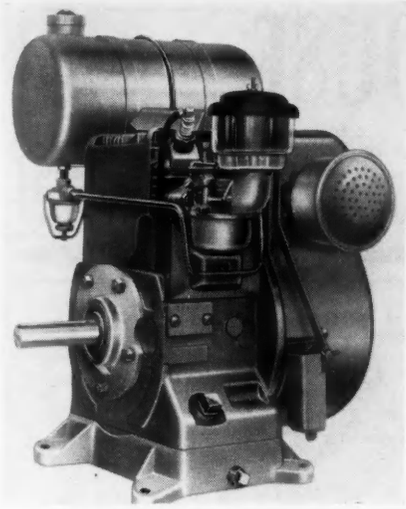
New Booklet Describes Heavy Duty Floor Armor

New Short Stroke Engine

A NEW, single-cylinder, 4-cycle, air-cooled, gasoline engine—Model AJ—has been announced by D. W. Onan & Sons Inc., Minneapolis, Minn.

Now . . . for the first time . . . D. W. Onan & Sons Inc. is offering its high-quality, air-cooled electric plant engine, Model AJ, to the mass engine market at competitive prices. Claimed to deliver more horse-power hours per dollar, the Onan Model AJ engine was developed primarily as the prime mover for the firm's new line of lightweight, portable electric generating plants.

Basic requirements of this new electric plant engine were exceptionally severe. To meet the exacting demands of Onan engineers, this engine had to be compact, smooth-running, light in weight . . . yet capable of running hundreds, even thousands, of hours with minimum servicing. That the new engine met these rigid requirements is told in the thousands of orders now being received by the fac-



New Short Stroke Engine

tory for Model AJ portable electric generating plants.

The Onan Model AJ is a single-cylinder, air-cooled, 4-cycle, gasoline-powered engine developing 5.5 h. p. at 3600 RPM. Weighing only 86 pounds, this compact, powerful little engine has a 2¾″ bore; 2½″ stroke; 14.9 cubic-inch piston displacement and a compression ratio of 6.25:1. It has a removable aluminum-alloy cylinder head and a full counter-weighted, balanced crankshaft. The engine has high tension magneto ignition and is started by means of a manual pull-rope, although recoil starters or electric starting are available. Optional equipment includes: Rotating Stellite-faced exhaust valve and solid Stellite exhaust seat insert; mounted fuel tank; fuel pump; oil pump; recoil pull-rope starter; a 6-volt or 12-volt Bendix starter . . . and VACU-FLO Cooling, Onan's new, exclusive cool ing system for Onan air-cooled engines.

The Model AJ engine will add outstanding performance and extra sales appeal to such typical engine-driven equipment as: Compressors, irrigation pumps, refrigeration units, construction equipment and farm implements.

For complete information on this new engine, write D. W. Onan & Sons, Inc., Dept. TE&M, Minneapolis 14, Minn., or *Check New Product* 956.

Manhole Shield

THE NEW Cope Adjustable Manhole Shield keeps surface water and dirt out of the open manhole.

The Shield is 12″ high, and is made of electrically-welded steel. It is finished in the standard Cope red and weighs 40 lbs. — For complete data, *Check New Product* 957.

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THE BUYERS' GUIDE

ADVERTISING, Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BELTS — CLIMBERS — PLIERS — SAFETY STRAPS — CONSTRUCTION TOOLS. *Klein & Sons, Mathias, 7200 McCormick Rd., Chicago 45, Ill.*—[ADV. 3]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 4]

BRUSH & WEED KILLERS — *Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems. Thompson Chemicals Corp., St. Louis 3, Mo.*—[ADV. 5]

CABLE, All Plastic, Aerial, Duct, Direct Burial, PBX, Switchboard. — *The Ansonia Wire & Cable Co., Ansonia, Conn.*—[ADV. 6)]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 7]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 8]

FURNACES — For quickly and economically melting lead and paraffin — *Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.*—[ADV. 9]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 10]

LIGHTWEIGHT PULLERS — *Coffing Hoist Company, 800 Walters St., Danville 5, Ill.* — [ADV. 11]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 12]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 26, Minn.* —[ADV. 13]

POLES, Southern Yellow Pine — *Colfax Lumber & Creosoting Co., Inc., P. O. Box 23. Pineville, La.*—[ADV. 14]

POLES, Southern Yellow Pine — *Taylor Colquitt Company. 217 E. Main St., Spartanburgh, S. C.*—[ADV. 15]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 16]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 17]

REBUILT TELEPHONES & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 18]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 19]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., Milltown, N. J.*—[ADV. 20]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket. R. I.*—[ADV. 21]

WIRE, Telephone, for all inside and outside uses — *Whitney Blake Co., New Haven, Conn.*—[ADV. 22]

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Excellent opportunities for advancement with a fast-growing Southern California Independent Telephone Company. Submit complete resume of experience, training and education, including references and recent photograph to Box 9015, Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Illinois.

PLANT ACCOUNTANT—To be in charge of plant records and to work directly with chief accountant assisting with general accounting. Excellent opportunity with rapidly expanding group of Class A companies located in midwest. Excellent working conditions and employe benefits. Please write stating education, experience and salary desired to Box **9022,** Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.

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14 years experience all phases of Telephone Construction, installation and maintenance, also some Kellogg dial. Write Box 275K, Route 1, Roswell, N. M.

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Man 34 years old, 15 years experience in outside plant supervision and engineering would like plant or manager position. Write: Box 9021, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois.

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Young man, 30 wishes to relocate to Great Lakes Area. Previous experience in Outside Plant Engineering, Construction, Supervision and Management. Presently Resident Engineer in Southwest. Reply Box **9023,** Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago, Ill.

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Equipped 25 Station Lines
4 Trunks
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Kellogg 2029-CEY/2048-SR; 561-A; 579-D; 2029-SW/2028-SV; 2029-SAH/2028-SR
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Prices are F.O.B. Chicago
INDEPENDENT TELEPHONE REPAIR CO.
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Dependable and Economical Telephone Ringing Power Equipment.
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Formed-flexible finishing cloths (Patented); Flat finishing cloths; Catch cloths; Crotch cloths and Up-right joint catch cloths. Made of world-prize HERRINGBONE TICKING or imported English MOLESKIN. If your jobber cannot supply you write us for literature and prices.

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FOR SALE: A. E. Central Office Equipment. 8-position, cordless switchboard complete with senders, miscellaneous trunk circuits as listed:—Tone Detect Links; Digit Register; Link Distributor; Position Start; Sender Selector Relays; Toll Trunk; Common Battery Line Trunk; Magneto Line Trunk; Toll-Out Trunk; Connector-Intercept Trunk; Inter-Position Trunk; Information Trunk; 238 Strowger Switches; and several thousand pounds of associated iron work, relay racks, and frames. Equipment only in use since 1942 and at present in storage. Will sell all or part at fraction of cost.—Contact H. Robbins, 1202 W. Dobbs St. Tyler, Texas. (Phone—4-4208.)

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FORD, DODGE and CHEVROLET
LINE TRUCKS FIVE MAN CABS
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LITE SWITCH will turn on your booth light at dusk, off at dawn. 10 days free trial. Write, ERNST RADIO, ALGER, MICHIGAN.

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"Outright or controlling interest in telephone company of about 200 to 800 stations" Reply Box 9024 Telephone Engineer Publ. Corp. 7720 N. Sheridan Road, Chicago 26, Illinois.

Harry H. Bates Dies

HARRY H. BATES, 72, Oregon, Ill., executive vice-president, secretary and general manager of the Dixon, Ill., Home Telephone Co., died May 25.

Mr. Bates, regarded as one of Dixon's best known business executives, entered the hospital May 12, after he was injured in an auto collision. He suffered fractured legs and ribs and cuts and bruises in the accident, but his condition was considered "fair" until a recent relapse.

Mr. Bates joined the Dixon Home Telephone Co., in 1939 as a general

HARRY H. BATES

manager. He was formerly associated with his father in the operation of the Bates Tractor Co., Joliet.

Mr. Bates was a native of Joliet and held an engineering degree from Cornell University.

Since joining the Dixon Home Telephone Co., Mr. Bates and his associates introduced many new features to the system until today it is regarded as one of the finest systems in the nation.

Mr. Bates was the past president of the Illinois Telephone Association and at the time of his death was director of the association. In addition, he was past president of the Dixon Toastmaster's club, a member of the Dixon Lions, and the Dixon Foreign Travel club.

His travels in Europe, mostly in recent years, were his particular hobby, although he loved music and dined out often with his friends. His friends knew him as a fine dinner companion, one who possessed a fine wit and a store of information about foreign lands.

Perhaps little known to other than his close friends, was the fact that he was an inventor. He held a number of patents on mechanical devices. He had transformed one room of his home in Oregon into a music room, complete with intricate, self-devised high fidelity sound equipment.

He is survived by two sons, Dr. Robert J. Bates, Joliet Physician; and Lt. Col. T. R. Bates, a consultant to the Philippine Government, but attached to the U. S. Air Force; and a daughter, Mrs. Allen (Betty) Bakewell, wife of a mining engineer now in the Philippines. His wife, Georgia, preceded him in death in 1953.

Kellogg To Distribute Panhandle Carrier Systems

Kellogg Switchboard & Supply Co., is now exclusive distributor to the United States independent telephone industry and to the export field of the Panhandle FM Telephone Carrier Systems according to an announcement by W. P. Hollis, sales manager.

These systems, which are manufactured by the Panhandle Electrical Construction Co., Amarillo, Texas, have been in use throughout the country for five years.

Being an FM System, no synchronization is necessary and automatic regulation is provided. This means that a constant voice level is always maintained regardless of variations in circuit attenuation. Carrier frequencies are crystal controlled, further insuring maximum stability of operation. The equipment is factory preadjusted and in normal installations no adjustments of any kind are required to place the equipment in service.

Designed for either subscriber or trunk service, these systems will accommodate all types of signalling 10-party full selective divided or bridged ringing, code ringing, superimposed ringing and E and M dial signaling. They will provide 10 channels per circuit (or 20 channels per pole lead) and will not interfere with standard AM carriers on the same circuit. All functional units of the "Panhandle Carrier" are of the "plug-in" type. Transmitter unit and receiver unit are identical for all channels.

Application assistance is being offered. For further information, write Kellogg Switchboard & Supply Co., sales office, 79 W. Monroe St., Chicago 3, Ill.

ALPHADUCT DROP WIRE carton packaging

Once you start using Alphaduct Drop Wire you will find out that the handy carton packaging has real dollars and cents advantages.

Not only does your wire arrive in perfect condition, but the sturdy carton protects it all the while it's in your warehouse.

The cartons are easier to handle than loose coils. They can be stacked higher without danger of falling and the wire on the bottom will not be crushed or bent. Space is saved, inventory taking is simplified, and the possibility of injuries to workers from tumbling coils is removed.

We try to make Alphaduct the finest, longest lasting drop wire money can buy. Quality materials are used throughout, step-testing during every phase of manufacture assures uniform high standards. Alphaduct drop wire is dated with a color coded thread so you can tell for sure how long it lasts.

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THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

GENERAL CABLE SYSTEM

Dwyer Named Vice President Electric Storage Battery Co.

E. J. DWYER has been elected a vice president of The Electric Storage Battery Co., Philadelphia, Pa. In addition to his vice presidential duties Dwyer will continue as secretary of the company.

A native of Norwalk, Conn., Dwyer joined the manufacturer of Exide, Grant and Willard batteries in 1948

E. J. DWYER

became assistant secretary, directing the company's legal department and its stockholder relations. He was made secretary in August 1954 and the following January he was elected to the board of directors. He also is secretary and a director of ESB International Corp. and Jessall Plastics, Inc., and secretary of Exide Batteries of Canada; Ltd., subsidiaries.

Automatic Electric Corp. Offers Free Merchandising Literature

A NEW envelope stuffer showing telephones in full color is now available without charge to telephone companies.

Each colored telephone is shown with a room setting. Enclosed with the telephone company's monthly bills, the stuffer illustrates how subscribers can use colored telephones to give their homes, stores, and offices "a bright, modern touch of color." Eight colors are offered: Sand Beige, Garnet Red, Dawn Grey, Sunlight Yellow, Turquoise, Classic Ivory, Colonial Blue, and Jade Green.

Stuffers in any quantity required can be obtained by writing Automatic Electric Sales Corp., 1033 West Van Buren St., Chicago 7, Ill. Samples may be obtained in advance if de-

STROMBERG-CARLSON

Transmitter

A DIVISION OF GENERAL DYNAMICS CORPORATION

VOLUME 5, NUMBER 3 • JUNE, 1956

Complete cooperation:

Telephone Company Assists Defense Program

The California Water and Telephone Company had been asked to provide dial telephone facilities for an Air Force Base within their service area on the West Coast. Urgent requirements of national defense made an almost impossible delivery date imperative.

The equipment order, which included a complete XY Dial central office exchange and a 2-position manual switchboard was placed with Stromberg-Carlson Company during the winter.

Ordinarily the delivery time for such an order, involving new circuit designs, would be many months. However, in view of the urgency of the project which is associated with the U. S. Defense Department's guided missile program, the order was given "crash" status. Engineering and production personnel were assigned to the work in double shifts, and the shipment was made early this spring, ahead of schedule.

The end user played an unusual part in this reduced delivery time, sending an Air Force cargo plane to Rochester to pick up the equipment and transport it direct to the Air Force Base on the West Coast. In the photograph below Stromberg-Carlson personnel who followed through on this project are shown at the airport as the job is delivered.

Creston, Iowa

Carlson Completes Creston Cutover

1800 Line XY® Dial office for Iowa city

Galen Sevier, front, and Vic Casteel, wire chief, snip cables to old manual board as XY Dial equipment takes over.

Ed Carlson of Creston, Iowa, has just completed two terms as president of the Iowa Telephone Association. Almost at the same time that he handed over the gavel of office with one hand, he used the other to signal the cutover of his new 4000-terminal XY Dial exchange in this central Iowa city.

A few minutes after midnight, operators on the new No. 3 Toll Board used direct dialing to set up calls from Mayor Fred Urbach and Chamber of Commerce president Bill Brown to friends in California. And needless to say, a goodly number of subscribers were "from Missouri" in that they stayed up to see how the new dial system worked.

Creston is a "larger middle-sized" city, predominantly the center of a thriving agricultural region and also a railroad center. The Creston Seed Co. is the largest blue grass processing plant in the world. Armour and Swift both have plants here. The Gits Co. makes oil cups for cars and trucks. Veg-a-Peel Co. makes institutional and hotel potato-peeling machines which can peel a carload in a day — inglorious end to KP duty!

Manager Ed Carlson came into the telephone business 30 years ago. At 11 he built his first home radio and is still a "ham." Even in the Army, where he rose to Captain, he "ran" communications. Coming to Creston in 1945, he found that he had a first-class right arm in the person of Mrs. Louetta Stoneburner, chief operator, who had been in charge during the magneto era, carried on during the common battery interlude, and will now supervise nationwide operator toll dialing.

Mr. C. A. Henry, commercial manager, came with the company about the same time as Mr. Carlson and is responsible for most of the business operations and special service installations throughout the city. Victor Casteel, wire chief, has accumulated a deal of practical knowledge working along with Lloyd Camp, Stromberg-Carlson installation foreman, and will further his education at the XY Training School in Rochester.

Creston congratulates Carlson!

Ed Carlson has become thoroughly versed in good telephone management through his 30 years experience.

President T. P. Roberts throws main switch to innaugurate dial service for Creston.

Practice makes perfect. Mr. Carlson explains the XY Dial Demonstrator to "typical" customers — Mayor Urbach and C. of C. president Brown.

Training session on the 6-Position No. 3 Toll Board just prior to taking out the old manual board (background).

the editor's mail

Students Spin Dials

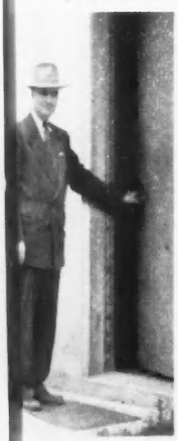
The Phillips County Telephone Co. of Holyoke, Colorado, recently demonstrated proper use of dial telephones to the group that—according to a recent LIFE Magazine article—will give the new XY® Dial system the biggest workout.

Manager Daryl Kropp arranged with the Superintendent of Schools for Stromberg-Carlson representative Bob Leary to demonstrate proper dialing procedures in the public schools. Mr. Kropp also used this opportunity to stress telephone courtesy to the 830 students who participated in the four demonstrations. Their keen interest was shown by more than 300 questions directed to the telephone company management.

Young people are always fascinated by their first experience with a dial system. Through a good public relations program, such as used by Mr. Kropp, this curiosity can be built into a positive asset. As Holyoke went to dial three weeks ago, the benefits of this demonstration were immediately apparent.

New Corporation

Announcement was recently made of the formation of a new holding company — Independent Telephone Corporation — with Mr. William B. Harrison of Alfred, N. Y. as president. Three New York state operating companies are already included in the parent corporation and all construction, maintenance, billing and financing procedures will be centralized through headquarters in Dryden, N. Y.



W. B. Harrison

It seems only a little while ago that your editor received his first editorial assignment in this magazine — that of writing about the *then* small Allegany Telephone Company and Mr. Harrison's entry into the telephone field (TRANSMITTER, June 1952). There's been a lot of water under the bridge since then, Bill!

Honored

Everyone who knows Vic Burchett, genial and genuine sales representative in Minnesota and the Dakotas, will be pleased to know that his son James has won the first Stromberg-Carlson university scholarship. Jim, who distinguished himself in academic standing, sports and extra curricular activities, will study engineering at Minnesota University.

43 Million Subscribers

Foster McHenry

No, Foster McHenry of Jefferson City, Mo., doesn't have that many dues-paying members, even though the Capital City Telephone Co. is one of the larger and better-run independent companies.

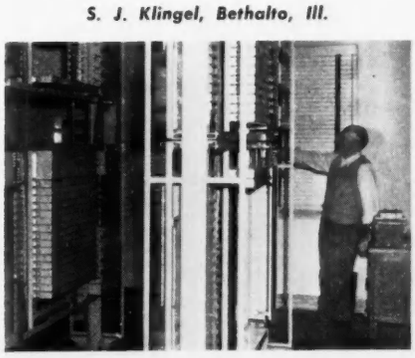
As part of a carefully planned and continuing public relations program through the newspapers, this company points out that 43 million other people can be reached directly by dial from any of the city's 13,000 phones.

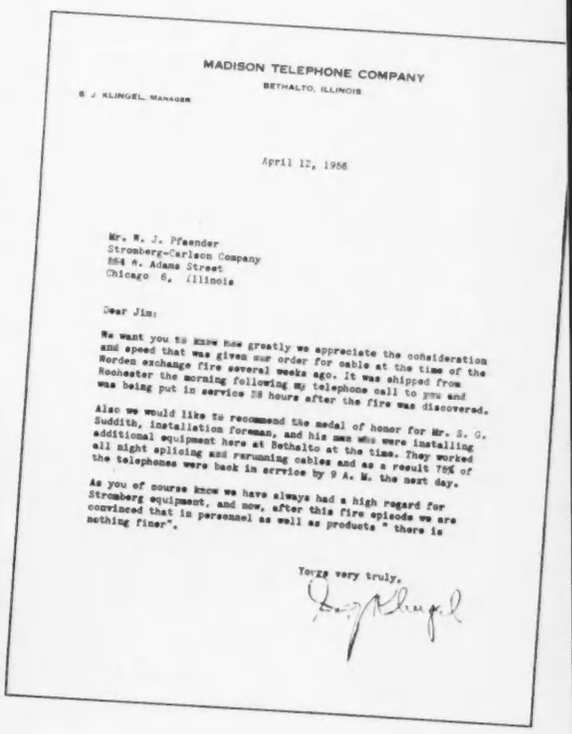
The same is true most everywhere. Have you tried telling your folks about the advances in independent telephony and the many new services now available? For Capital City, it pays off.

Call Answered

When a telephone manager wants action he naturally reaches for the phone. Mr. S. J. Klingel of Bethalto, Illinois, did this awhile back; he needed action fast and he got it. Thank you for sending this fine letter, Mr. Klingel. Naturally we hope you won't have another emergency, but *if* you do, call on us again.

S. J. Klingel, Bethalto, Ill.





MADISON TELEPHONE COMPANY
BETHALTO, ILLINOIS
S. J. KLINGEL, MANAGER

April 12, 1956

Mr. W. J. Pfaender
Stromberg-Carlson Company
864 W. Adams Street
Chicago 6, Illinois

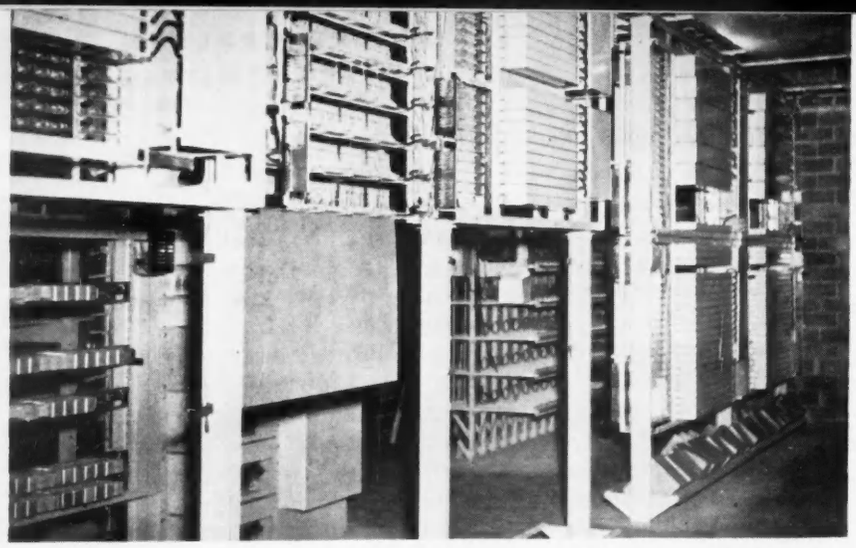
Dear Jim:

We want you to know how greatly we appreciate the consideration and speed that was given our order for cable at the time of the Norden exchange fire several weeks ago. It was shipped from Rochester the morning following my telephone call to you and was being put in service 28 hours after the fire was discovered.

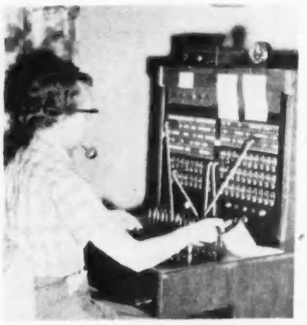
Also we would like to recommend the medal of honor for Mr. S. G. Suddith, installation foreman, and his men who were installing additional equipment here at Bethalto at the time. They worked all night splicing and rerunning cables and as a result 78% of the telephones were back in service by 9 A. M. the next day.

As you of course know we have always had a high regard for Stromberg equipment, and now, after this fire episode we are convinced that in personnel as well as products " there is nothing finer".

Yours very truly,

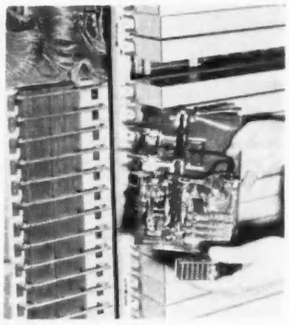


Fosston office of the Garden Valley Telephone Co., with headquarters at Erskine, Minnesota.



Final step in the transition; switchboard is now history.

The new "Operator" takes over the job.



A few of the trucks servicing extensive plant. Trencher laid as much as 1500 feet of cable in one day.

Commercial Department, under Lloyd Amans, uses latest business methods, including microfilm. A quarter of a million tickets are filmed and mailed each year.

Mr. Carl Ostby, Manager, Stromberg-Carlson Hands-free telephone gives him a "third arm" for quick answers to calls.

Garden Valley C[illegible]

Culminates 50 Years Pro[illegible]

Telephone service came to the eastern part of the Red River Valley just 50 years ago, when a group of 18 men decided to pool their funds and "build a telephone line for mutual convenience" between Fertile and Winger. This was the beginning of the Garden Valley Telephone Company — one of America's first cooperatives, and still one of the largest.

People living in this rich farm and dairy region, hard by the Canadian border, still like the idea of cooperation for the common good — whether it's in grains, butter, sugar beets or telephone service. As they have combined hardihood with new skills to wrest a good living from a not-too-soft climate, they also wanted — and were willing to pay for — the things which make life more enjoyable. This has always been true in the Garden Valley (the company weathered the depression years without curtailing service, and actually retired much of its debt during those severe times) and it was true as the new management, represented by Carl Ostby and President W. E. Day proposed the complete modernization of the plant in 1950. Now they are jointly celebrating the 50th year of incorporation and the complete conversion of all exchanges to XY Dial operation.

Your reporter was invited to visit the Garden Valley recently: a continuation of a pleasant association which began in Rochester in the winter of 1954. From shirt sleeves in Iowa and Nebraska to galoshes and wool mittens — with the roads just opened from the last snow, and to be closed in again the following day. But the "telephone welcome" is genuine anywhere. And besides, sympathy — if offered — would be wasted in northern Minnesota. They'll take their snow, and raise bigger crops of sugar beets, richer cream or forests that replenish themselves faster than they are being cut. They'll take their 10,000 lakes, too, and their unexploited peat beds — their combination of soil and climate which produces eggs unmatched for keeping qualities and they'll welcome you too — as visitors to a vacation paradise

21-Office Dial Program Completed:

Progress for Minnesota Cooperative

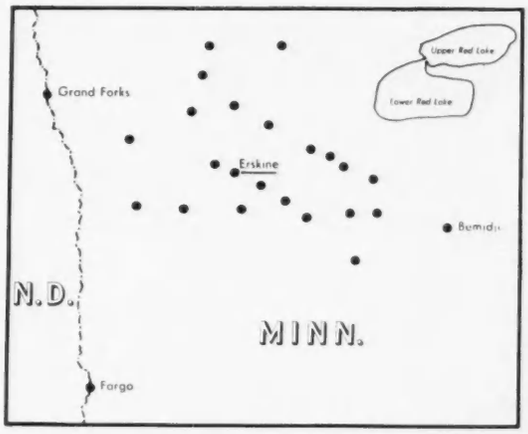
or as permanent resident, for there's plenty of room in Garden Valley.

The job just completed was never easy. Long winters, with frost penetrating 4 feet deep, telescoped the effective working time on much of the outside plant. An assiduous training program in dial operation and maintenance, that filled in the gap, has borne rich fruit. And from the initial through the final stages, careful public relations — sparked by the Company's own publication "Voice of the Valley" — kept the subscriber-shareholders informed of what had been done and what was to be accomplished.

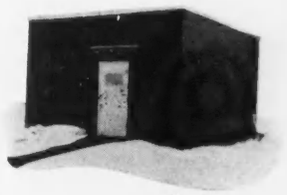
Carl Ostby manages the company with plaid shirt sleeves rolled. Former superintendent of schools in one of his towns, he knows his folks, for he is one of them. He encourages, by example, participation in civic projects for telephone company personnel. When Orrin Ness sings in a festival or Harold Peterson's boy goes up another rank in scouting, it's important to the telephone family as part of the community family.

Stromberg-Carlson has played a part over the full history of this company. At the 25th celebration, Mr. W. C. Caldwell, then sales representative for this area, was invited to share the speaker's stand. Those who now represent the company, Mr. W. J. Pfaender, Mr. V. C. Burchett and Mr. F. E. Monaghan, feel a supplier's justifiable pride as they salute Mr. Ostby, Mr. Day, Orrin Ness, Harold Peterson, the district directors and the many others who have brought this dream to a reality in the Garden Valley of Minnesota.

Cliff Olson, warehouse man, points out where plant crews are now extending some lines as Orrin Ness and Mrs. John Hamre bring records up to date.



Exchange area map, showing the 21-offices radiating out from Erskine in northwest corner of Minnesota.



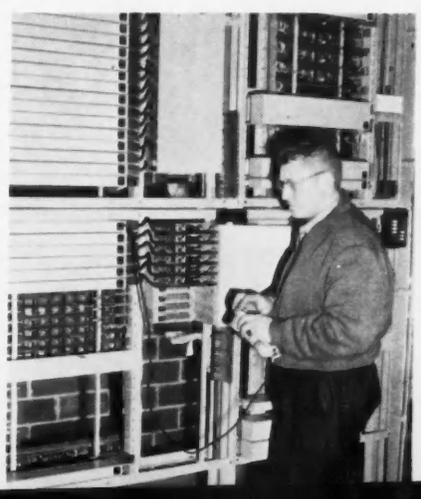
Typical of the smaller XY C.D.O.'s in the system. Snow is real, even in April!

Dial service always means new subscribers. Carl Ostby and V. C. Burchett of Stromberg-Carlson, check a list of additional requirements.

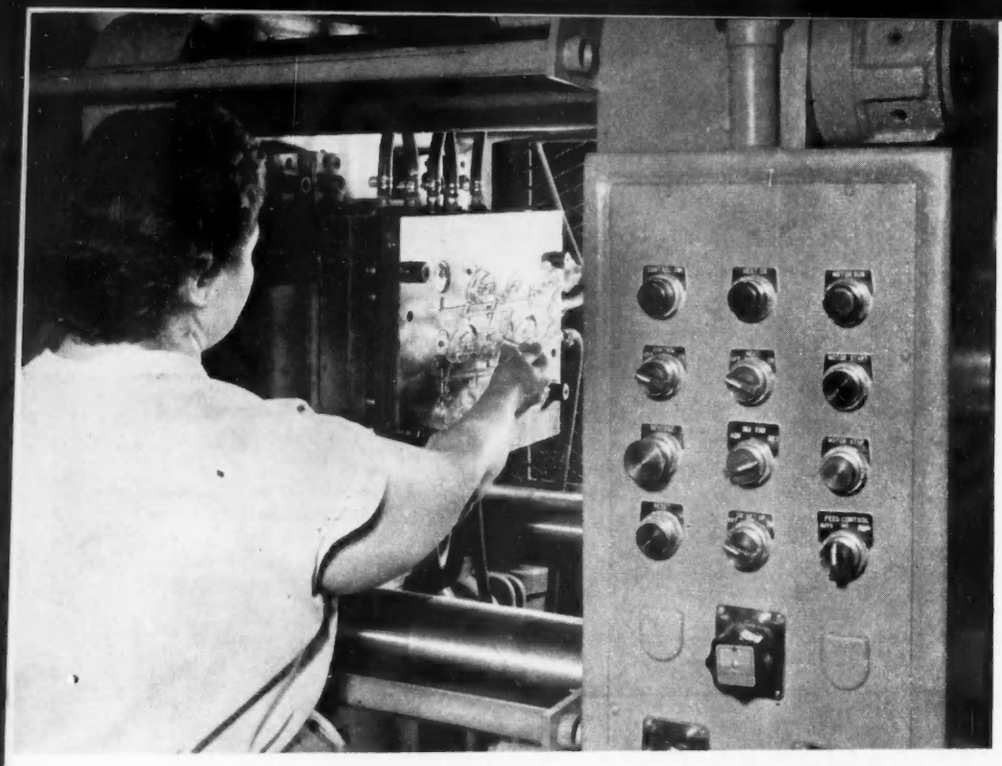
Exchanges of the Garden Valley Telephone Company

Town	Stations 4/1/56	Dial Date
Bagley	674	2/10/56
Beltrami	137	1/13/54
Clearbrook	347	9/ 7/54
Erskine	390	6/15/56
Fertile	623	6/ 4/54
Fosston	819	1/ 5/56
Gonvick	184	7/ 2/54
Goodridge	166	12/ 2/54
Grygla	214	1/15/55
Gully	184	4/ 9/54
Lengby	113	8/25/55
Leonard	52	9/15/54
McIntosh	432	4/15/55
Mentor	163	7/21/54
Minerva	82	5/ 4/50
Oklee	265	3/10/55
Plummer	129	2/ 7/55
Red Lake Falls	732	8/ 5/55
Shevlin	76	12/ 1/55
St. Hilaire	231	2/25/54
Winger	201	3/ 7/56
Total Stations	6,279	

Past and present merge. Art Olsted (right) has been keeping the company exchange and subscriber equipment in good working order since 1912; now helps Orrin Ness, chief C.O.E man, shoulder principal responsibility.



Harold Peterson, wire chief and expert trouble shooter. Both Harold and Orrin Ness attended the XY Dial Training School in Rochester.



Mary Riccardo removes complete shot of transmitter cups, consisting of 12 parts and runner system, from HPM 12-16 oz. injection press.

Powder

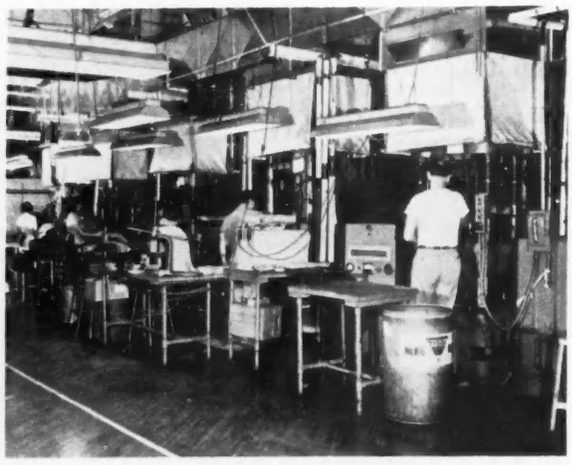
New presses

Even the most conservative will agree that plastics are here to stay. When a spacious and centrally-located area was set apart for the expansion of molding facilities, it naturally drew quite a bit of attention to this relative upstart among the machine departments.

Of course the open space shrank quickly as large new presses were brought in: an HPM 12-16 ounce injection molding press, capable of turning out over 1250 transmitter cups per hour; a new Stokes fully automatic 50-ton press for molding telephone instrument plungers and other thermo-setting components. During 1955 over 400,000 pounds of plastic molding powders were used as raw material for several score of compression and transfer molded parts. Especially since the addition of the injection molding process to make those thermoplastic parts which formerly were purchased — the hunger of this department for raw materials is becoming insatiable. The new HPM press also produces housings for the 1500 series telephones — in all eight colors.

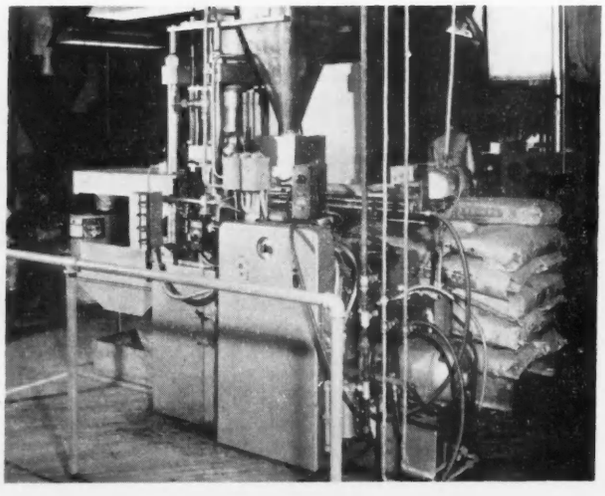
Production in the home plant of these and other critical parts has resulted in better quality control and improved delivery to the assembly departments.

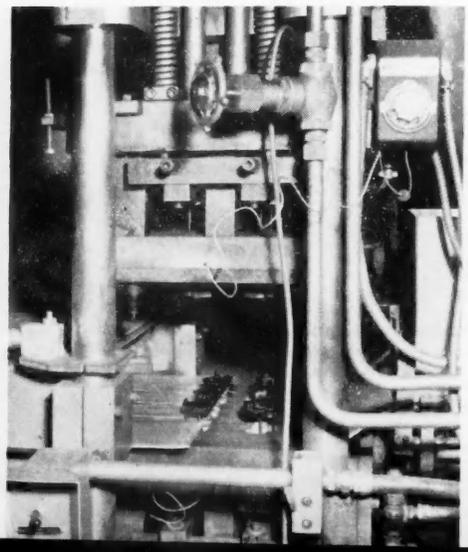
The Stokes Automatic, by removing the human element, produces a consistently more uniform part as a completely unattended operation. As long as the hopper is kept filled with power and the bins of completed parts are emptied as necessary, the machine runs itself. The cycle, pressure and temperature can be altered



Partial view of compression molding section, comprising in this bank 13 semi-automatic presses varying in capacity from 20 to 200 tons. Each press has individual exhaust hood, and make-up air duct which changes the air in the department every two minutes.

Complete view of Stokes fully-automatic press with simplified control panel for varying cycles, pressure or temperature.





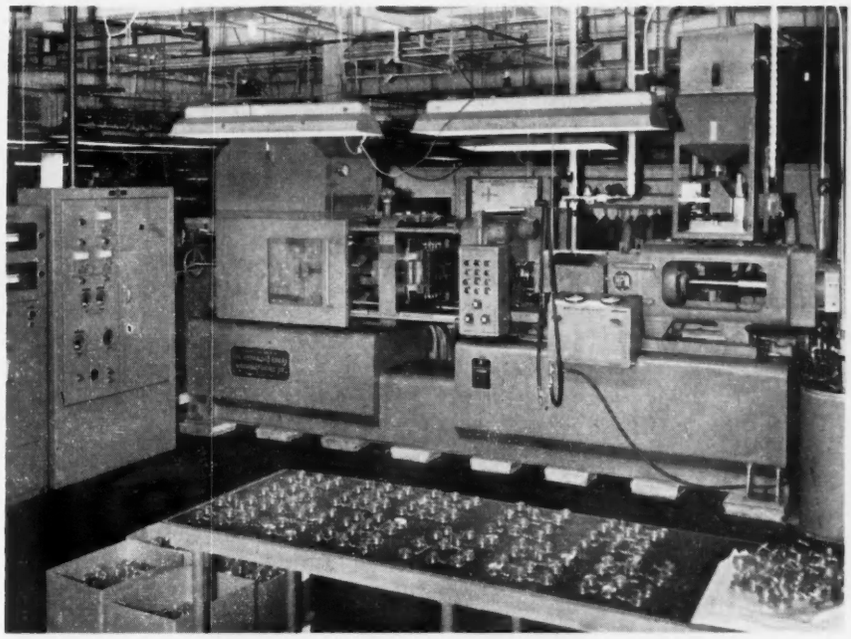
Close-up of same pr showing last stage molding cycle, parts being ejected tomatically.

o Plungers

roaden production facilities for molded parts

to meet the requisite molding conditions for a wide variety of thermosetting components.

With all the wizardry of the new processes, success still depends on people. Guiding the selection of presses, raw materials and job analysis are Richard Mullen, Production Engineering, and Edwin Palmer, and Gene Smith of Materials Engineering. Joseph Palumbo, with 14 years experience, is department foreman; Charley Schall, group leader of the second shift has the longest service record in the department; Everett Sharpe heads the third shift. The number of employes has remained relatively stable, while on both a qualitative and quantitative basis departmental production has soared.



You have to back up for a full view. The HPM 12-16 oz. injection molding press. Control panels for the press and mold temperature control unit at left.

MEET
Sherman B. Weiner
and
John E. Troutman

Sherman B. Weiner is Head of Advanced Development, Carrier Systems. He holds an Electrical Engineering degree from the University of Michigan, and has had wide experience in both dial telephone systems and radio-type communications.

Sherman B. Weiner

Joining Stromberg-Carlson in 1947 as an engineer in the Test Lab, Mr. Weiner conducted the first classes in the XY Training School. Later he became a traveling service engineer, then a sales-engineer in the home office, and in 1954 went to Dallas as Manager of Engineering for the carrier manufacturing branch. In 1955 this operation was brought to Rochester.

Mr. Weiner has been a member of A.I.E.E. since college days. He is an associate member of the Association of American Railroads, the Petroleum and Electrical Suppliers Association, and the Armed Forces Communications Association.

Mr. and Mrs. Weiner (the former Lee Baum of Tucson) and young daughter Sydnie Gail live in suburban Henrietta.

* * * *

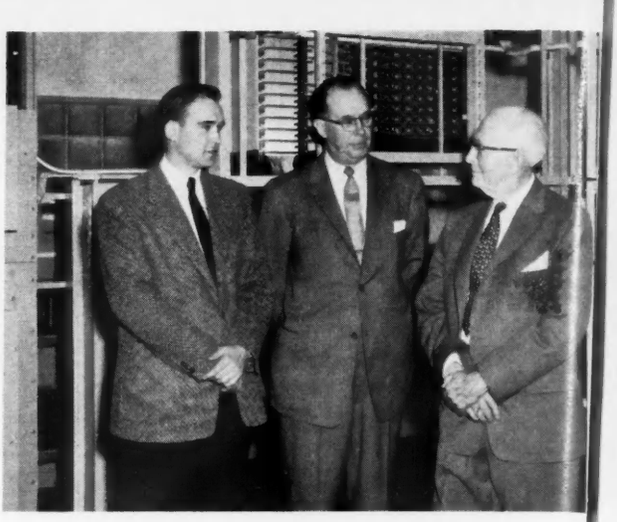
John E. Troutman is Section Head, Microwave Development. War service as a Radio Technician interrupted his college work but after discharge he completed his Electrical Engineering degree at the University of Pittsburgh. Before he came to Stromberg-Carlson in 1953 he had been an installer and equipment engineer with Western Electric Co., and while with the International Tel. and Tel. Co. helped engineer the country's first commercial microwave link. His first assignment at Stromberg-Carlson was the TACAN project. He is presently supervising the application of new techniques to microwave design.

John E. Troutman

Mr. Troutman is active in the Rochester Engineering Society, the I.R.E. and the A.I.E.E. All the Troutmans are avid outdoor enthusiasts; in 1953 they camped their way to Fairbanks, Alaska. Following this bent, and the additional hobby of photography, they have visited a large number of our National Parks. When they want a change from the rugged life, they curl up before the Hi-Fi in their living room.

For Ontario Telephone Company . . .

Twin XY® Dial Exchanges



Three generations of the Griswold family: Havey, right, is president; son Malcolm, center, is vice-president and general manager; grandson Robert is assistant secretary and commercial manager. Malcolm's other son John comes with the company after graduation from college this June.

It was early when we arrived at Clifton Springs, N. Y. — that is, early for a midnight cutover. The Lady had seen cutovers before, but the Boy was all agog and couldn't understand why there wasn't any excitement. "Let's start," he said, looking first at the Power Board and then the M.D.F.

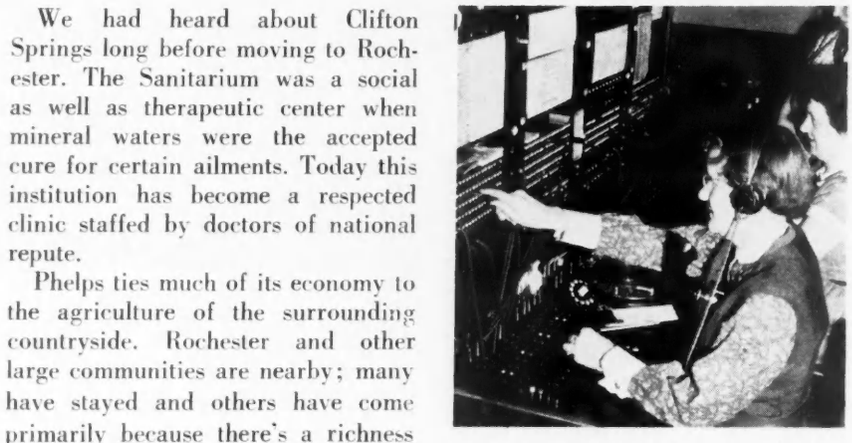
For the Griswold family — 3-generation management of the Ontario Telephone Company and the Trumansburg Home Telephone Company — conversion to XY Dial had become a habit, and the calmness stemmed from confidence, not complacency. And the Boy found it exciting anyway when the wires were cut at the appointed time and the first click of a stepping switch grew to a staccato blitz as the townsfolk rushed to try out their dial phones.

We knew that each of the towns served by the Griswold companies has had a glorious past in the era associated with stage coaches, fine hostels and gracious living. But as you talk with people you realize that they are more concerned with the present and the future — town and telephone company are planning this together. Working with capital supplied by their customers, the Griswolds have placed one office after another on dial service. After a completely satisfying experience in their earlier XY exchanges, Phelps was converted this last winter and an exact twin at Clifton Springs this April.

We had heard about Clifton Springs long before moving to Rochester. The Sanitarium was a social as well as therapeutic center when mineral waters were the accepted cure for certain ailments. Today this institution has become a respected clinic staffed by doctors of national repute.

Phelps ties much of its economy to the agriculture of the surrounding countryside. Rochester and other large communities are nearby; many have stayed and others have come primarily because there's a richness to life in a community so situated. Townspeople and telephone company look ahead with confidence.

"Okay, Dad. It's all over. Let's go home now."

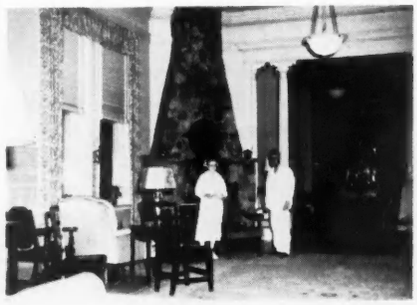


Last hours at Clifton Springs Manual board.

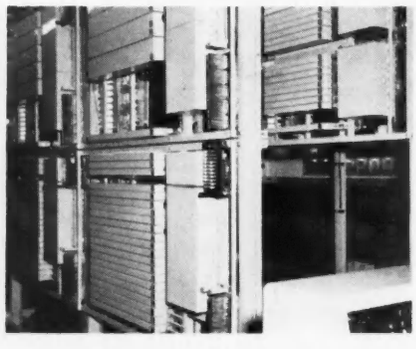
This is it! Local and long distance switch over together.

Well-wishers all; Clifton Springs.

Lobby of the Sanitarium



Twin XY dial office at Phelps.



STROMBERG-CARLSON TRANSMITTER

Published by

STROMBERG-CARLSON COMPANY

A DIVISION OF

GENERAL DYNAMICS CORPORATION

Rochester 3, New York

GEORGE B. FORBES, *Editor*

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the BACK of the BOOK

By John G. Reynolds

"5-Minute Phone"

COME THE REVOLUTION, it'll not be hard to trace its start to Tabiona, Utah. Already there is some unrest and the party line is stirring up still more.

The trouble started when the Utah Basin Telephone Association installed a device to cut off long-winded conversations on party lines. The gadget allows a user of the party line to talk for four minutes and then it interrupts to warn that the talking can go on but one more minute. At the end of that time the connection is automatically cut.

Now, aside from the dubious assumption that conversations can be wound up in one minute flat, there are some serious questions that arise from this arbitrary ruling. Already there are complaints that the gadget does violence to the Constitution — though the prohibition against free speech obviously does not apply; the speech is paid for by those who are talking and by those who are waiting to talk.

But how about the Constitutional provision against abridging the privileges of citizens? What about the prohibition against unreasonable seizure? And surely a good case can be made that forcing Aunt Jane to condense an afternoon's visit into five short minutes is unquestionably cruel and unusual punishment.

Clearly, the situation in Utah deserves careful attention, and it will certainly have ours. For if the revolution doesn't come and people take this assault on their rights without protest, it's a sure thing that the practice of limiting talk will be extended from party lines to private lines as well.

And when the day comes it won't take us five minutes to ask the telephone company to hurry to our house with one of the gadgets.

Character Corner

FROM time to time when certain place names are pronounced in a way the founders never intended, Traffic people come face to face with some characters who seem to have stepped right from the pages of literature.

For example, Michigan has a "Salt Stew Mary" (Sault Sainte Marie). Mary's probably short, stout and weather-beaten. She runs a sailor's boarding house somewhere on the Great Lakes. She's quick tempered, no doubt, but always willing to help a sailor lad in trouble.

Mary's cooking probably doesn't measure up to Virginia's "Auntie Clo" ((Quantico). Fat and jolly, Auntie Clo is probably renowned for fried chicken. Her yams drip with butter and the beaten biscuits melt in your mouth.

From Long Island there emerges a prim little figure. "Master P. Shaw" (Massapequo) is a pale and scholarly youngster, undoubtedly brought up by governesses and tutors, who is always addressed by his full title. No one ever addresses him as Pat or Pete.

Or, for a different twist, "Massa Peacock" emerges. Straight from the pages of *Uncle Remus*, he's a blood brother to Brer Rabbit and Brer Fox.

'In the Spring . . .'

IT'S ALWAYS a good idea to keep your mind on your work when you're talking on the telephone. That's the moral we draw from a recent story in the Peoria *Journal Star*.

It's part of the paper's routine that the operator must determine whether a long distance call is prepaid.

The standard challenge is, "Are you paid?"

One of the operators, having a few slack minutes, was reading the paper's society section. A long distance call came in.

"Are you married?" demanded the operator quite distinctly.

There was a vague hesitation at the other end of the line. "Yes," answered the obedient caller. With a ghastly chill the operator realized what she had said.

In her most friendly tone of voice she commented, "That's nice. So am I."

Slightly Mixed Up

THIS IS about the plight of a young St. Paul woman who forgot one important telephone by-word: always dial correctly. Named chairman of a club dance, she began calling merchants who had donated door prizes the year before. She dialed one of them, introduced herself and her purpose, but was told . . . .

"Well, we don't usually . . ."

"Oh, yes, you do," she interrupted. "You always have given us something for a door prize."

"Are you certain?"

"Absolutely."

"Well, I'm new here this year and may be mistaken, but we really haven't anything suitable to donate as a prize."

"Oh, yes, you do," the caller insisted. "And because the dance is Friday and we're in a hurry, I'll even come down myself and pick up whatever you want to give."

"But, I have no idea what we could give you."

"Well just anything would be acceptable . . . something in line with your business, of course."

"Lady, are you sure you have the right phone number?"

"Oh . . . isn't this the jewelry company?"

"No, ma'am, this is the Minnesota Funeral Directors Association."

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Put any operator before Automatic's new Type 6 Information Board, and watch! Once she flicks the "TALK" key, all she has to do is look up information. That's because automatic switching equipment (Type 6 is the first information board to have it) distributes the calls...helps the operator work *faster*. Many other useful features also speed her job and make it *easier:*

- Desks with plenty of working room (even armrests!)
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- Up to 6 directories at her fingertips
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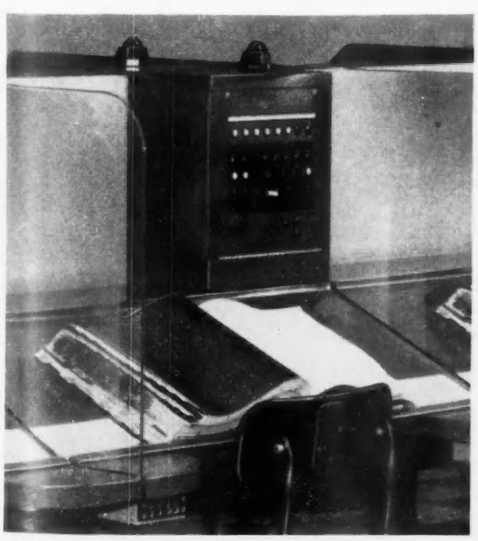

◀ Automatic's TYPE 6 Information Board

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